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Centennial Watershed Environmental Assessment

Dillon Field Office

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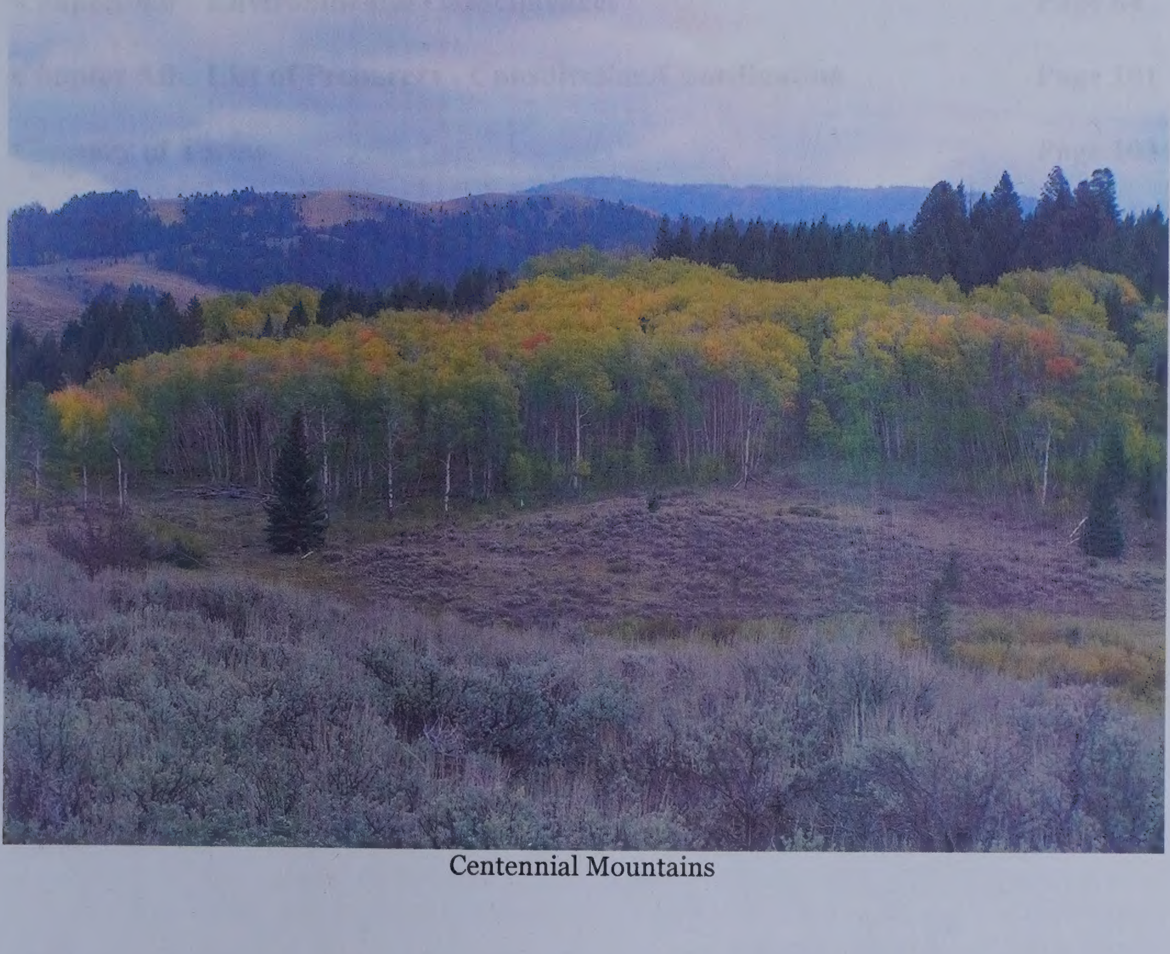

Centennial Mountains

United States Department of the Interior
Bureau of Land Management
Dillon Field Office

Centennial Watershed
Environmental Assessment
EA MT-050-05-02

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1.0 Purpose of and Need for the Proposed Action

1.1 Introduction and Background

The Centennial Watershed is located in southeastern Beaverhead and southwestern Madison Counties, Montana on the eastern slopes of the Rocky Mountains. The watershed lies in Townships 13-15 South, Ranges 1-7 West and Range 1 East Montana Principal Meridian. This Environmental Assessment (EA) covers public lands administered by the Bureau of Land Management (BLM) from approximately Lima Dam in Beaverhead County to the Red Rock Pass in Madison County and from the continental divide along the Montana-Idaho border on the south to the Gravelly Range on the north. This area includes public lands within two hydrologic unit code (HUC) 5 boundaries covering the Centennial Valley. The watershed boundary follows grazing allotment boundaries and includes some allotments that are partially within the watershed (see map - Appendix A).

Within the Centennial Watershed boundary there are approximately 347,543 acres of which the BLM administers 83,102 acres. This EA addresses only public lands administered by the BLM within the watershed. However, the watershed also includes approximately 59,832 acres administered by the State of Montana Department of Natural Resources (DNRC), 105,718 acres of privately owned lands, 39,231 acres administered by the Red Rock Lakes National Wildlife Refuge, 15,538 acres administered by the United States Department of Agriculture Agricultural Research Service (Sheep Experiment Station) and 44,122 acres administered by the United States Forest Service (USFS).

In 2004, a BLM interdisciplinary (ID) team assessed the land health of BLM administered land in the Centennial Watershed. The ID team assessed the following 5 Rangeland (Land) Health Standards: Upland Health, Riparian Health, Water Quality, Air Quality, and providing for Biodiversity. The Watershed Assessment reported the condition/function of resources within the assessment area to the Authorized Officer. The Authorized Officer considered the Assessment Report to determine whether Land Health Standards (Standards) were met, and then signed a Determination of Standards documenting where Standards were or were not met. The Assessment Report and associated Determination of Standards for the watershed were completed and released to the public in January, 2005, and are available at the Dillon Field Office.

The assessed condition/function and recommendations in the Assessment Report and Determination of Standards, along with comments received through public scoping, have been used to develop alternatives to initiate progress towards Proper Functioning Condition and address site specific resource concerns where needed. This EA was completed in accordance with established procedures to analyze and implement area, allotment or site specific changes.

By working on a watershed basis, a broader landscape is considered and more consistent management can be applied. It is the BLM's intent to implement watershed management cooperatively. Any changes in livestock management will be implemented through grazing decisions that address allotments or groups of allotments with a common permittee. Forest health and fuels management treatments or projects and any other management projects or changes will be implemented through Decisions appropriate for the respective programs.

1.2 Purpose of the Proposed Action

The BLM Dillon Field Office proposes to improve forest, upland, and riparian health in the Centennial Watershed. Land health would be improved on public lands within the Centennial Watershed by:

- Restoring/maintaining historic density, structure, and species composition of forest, woodland, whitebark pine and aspen habitats through mechanical treatments, commercial timber harvest and prescribed fire.
- Restoring/maintaining riparian, wetland and aquatic habitats (vegetation composition, structure, streambank stability) through revised livestock grazing management, pasture fencing, mechanical treatments, prescribed burning, structural projects and improved road maintenance practices.
- Restoring/maintaining sagebrush habitats (species composition and structure) through revised livestock grazing management and vegetation treatments that may include mechanical treatments and/or prescribed fire to remove encroaching conifers.

In addition to revising management to address forest health issues, fuels management, wildlife resource management, recreation and wilderness opportunities, this EA analyzes livestock grazing management revisions on the following 20 grazing allotments: Antelope Peak, Fish Creek, Monida Hill, Munday Reservoir, Oxbow, Passmore SGC, Phalarope East, Price Creek, Brundage Creek, Lima Reservoir, Mud Lake Field, Sand Dunes, Saier Individual, Brundage Bridge, Cook Sheep Camp, Morton Individual SGC, Munday East, Ritchie SGC, Tom Creek and Windmill.

No livestock grazing management revision will be considered on the following 21 allotments: Coconougher Individual, Shambo Units, Peet Creek, Long Creek AMP, Centennial, Duff Creek AMP, Red Rock, East Clover Creek, 7L SGC, Bean Place, Centennial Isolated, Curlew, Davis Common SGC, Jones SGC, Long Creek SGC, Lousy Springs, Mata-Stib SGC, McCandless Brothers, Monida-Corral Creek, Rody Individual and Shineberger. Livestock management has been revised and changes implemented within the past five years on the Shambo Units, Peet Creek and Long Creek AMP allotments. Within the other 18 allotments, all Standards were met and no site specific resource concerns were identified that were related to current livestock management.

Implementation of the Decisions resulting from this EA will begin in 2005, but full implementation of forest treatments, fuels projects, revised grazing rotations and/or range improvement projects associated with these plans may take five to ten years, and are subject to budget constraints. The new plans will be developed and implemented in consultation and coordination with the affected permittees, the agencies having lands or managing resources within the area and other interested parties. As with all similar BLM decisions, affected parties will have an opportunity to protest and/or appeal these decisions.

1.3 Need for the Action

The Fundamentals of Rangeland Health and subsequent Land Health Standards require the BLM to initiate management actions that ensure, "Watersheds are in, or are making significant progress toward, properly functioning condition, including their upland, riparian-wetland, and aquatic components…" (43 CFR 4180.1 (a)), if an assessment determines one or more of the Land Health Standards are not being met. In the Centennial Assessment Report, the ID team described several causal factors combining to negatively impact the biological, physical, and ecological processes in the watershed. As a result, the Authorized Officer determined that the Biodiversity Standard is not met within the watershed as a whole, and one or more of the Standards are not met in twenty of the forty-one allotments assessed.

The ID team found that due to fire exclusion over the past 120 years, conifer species are expanding into the sagebrush steppe, aspen and riparian habitats in the watershed. The density of trees, specifically within the Douglas-fir forest, has also increased to the point that it is outside the historic range of variability. There has been a shift in plant community types in the upland habitat, especially evident in declining aspen communities and in riparian areas. Increasing tree density within the forested habitats is decreasing the flora and fauna biodiversity in the watershed. Forest health conditions in the lower to mid elevation zones have substantially declined due to the combination of overstocked stands, drought conditions and insect epidemics. Forest health was found to be Functional-At-Risk with a downward trend in the watershed.

Since Land Health Standards were not met in some areas due to unhealthy forest and hazardous fuels conditions, "other program guidance for the appropriate steps to be taken" to make progress toward meeting Standards (as referenced in H-4180-1) includes the Healthy Forests Restoration Act, the Healthy Forests Initiative (HFI), the National Fire Plan and the Dillon Fire Management Plan to implement appropriate treatments. Prescribed fire, commercial harvest, and non-commercial mechanical treatments are being proposed, where appropriate, to restore some measure of resiliency in these stands. One of the emphasis items of the National Fire Plan, the HFI, and the 10-year Cohesive Strategy is to reduce hazardous fuel accumulations and restore the health and natural processes within forests and rangelands. The objectives of these emphasis items are to reduce the risks of catastrophic wildland fire to people, communities, and natural resources while restoring forest and rangeland ecosystems to closely match their historical structure, function, diversity and dynamics.

Livestock management within seven allotments included in this EA has been determined by the Authorized Officer to be a significant causal factor in failing to meet one or more of the Land Health Standards. The allotments that will require livestock management changes are: Fish Creek, Munday Reservoir, Passmore SGC, Phalorope East, Brundage

Creek, Brundage Bridge and Ritchie. Pursuant to 43 CFR 4180.2(c), livestock-caused failure to meet any of the Standards mandates BLM to change management prior to the next grazing season and implement actions that will result in significant progress toward fulfillment of the Standards. Practices and activities subject to standards and guidelines include the development or revision of Allotment Management Plans (AMPs), establishment of terms and conditions of permits, leases and other grazing authorizations, and range improvement activities such as vegetation manipulation, fence construction and development of water sources. Livestock management changes are being proposed on several others allotments to address site specific concerns and/or facilitate more efficient administration or management.

1.4 Scope of this Environmental Analysis – Scope, Plan Conformance, Critical Elements, Issues

1.4.1 Scope

The scope of the proposed action includes implementing vegetation treatments including commercial and non-commercial timber harvesting and prescribed burning, and implementing specific use of herbaceous vegetation through authorizing livestock management on public lands. The proposed action also includes installation, construction, removal or modification of specific structural projects such as fences, culverts, road crossings and water developments. The proposed action is not an all-inclusive management plan for the area or a programmatic EA, but it addresses several program areas that effect land health.

1.4.2 Conformance with BLM Land Use Plans, Programs, and Policies

The lands included in this analysis are located on public lands managed by the BLM's Dillon Field Office. These lands are managed according to decisions in the Dillon Management Framework Plan (MFP) approved in 1979 and the Mountain Foothills Environmental Impact Statement (EIS) approved in 1981. The EIS was written in consideration of rangeland management issues and policies. The proposed action is in conformance with the Dillon MFP, the Mountain Foothills EIS, and the proposed Dillon Resource Management Plan (RMP). It is in conformance with the Federal Land Policy and Management Act, the Taylor Grazing Act, the Standards for Rangeland Health and Guidelines for Grazing Management (43 CFR 4180), the Interim Management Policy for Lands Under Wilderness Review, the Healthy Forests Initiative, the Healthy Forests Restoration Act and with BLM policies and Federal regulations.

The proposed action was developed while considering the goals, objectives and management recommendations in the Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout in Montana, the Lynx Conservation Assessment and Strategy, the Grizzly Bear Recovery Plan, the BLM's National Sage-grouse Strategy, and the Management Plan and Conservation Strategies for Sage Grouse in Montana.

1.4.3 Critical Elements of the Human Environment

Critical Elements of the Human Environment, as defined by BLM Manual 1790-1, must be considered in all BLM EAs and EISs. The scoping process indicated which Critical Elements may be affected by the alternatives.

Table 1: Critical Elements of the Human Environment

Critical Element	Not present	Present, but not affected	May be affected*	Comments
Air Quality			X	Discussed under Resource Concern #3 – Air Quality
Areas of Critical Environmental Concern (ACECs)			X	The Centennial Sandhills proposed ACEC is discussed under Issue #3 – Upland Health, Upland Habitat and Associated Species. The Centennial Mountains proposed ACEC is discussed in Section 4.2.1
Cultural Resources			X	Discussed under Resource Concern #2 – Cultural Resources
Environmental Justice	X			
Farmland (prime or unique)	X			
Floodplains			X	Discussed under Driving Issue #2 – Riparian, Wetland and Aquatic Habitat and Associated Species
Hazardous and Solid Wastes	X			
Invasive Non-native Species			X	Discussed under Driving Issue #3 – Upland Health, Upland Habitat and Associated Species
Native American Religious Concerns	X			
Threatened & Endangered species			X	Discussed under Resource Concern #1 – Threatened and Endangered Species and Migration Corridors
Water Quality (drinking or ground)			X	Discussed under Driving Issue #2 – Riparian, Wetland and Aquatic Habitat and Associated Species
Wetlands/Riparian Zones			X	Discussed under Driving Issue #2 – Riparian, Wetland and Aquatic Habitat and Associated Species
Wild and Scenic Rivers		X		See Section 3.2.13
Wilderness			X	Discussed under Resource Concern #6 – Wilderness Characteristics

*A "yes" or "X" in this box means that the resource is further evaluated in the affected environment and environmental impacts sections.

1.4.4 Description of Driving Issues, Resource Concerns and Objectives

Driving issues have a direct bearing upon the proposed action and the process of how we achieve the purpose and need. They are used to drive development of alternatives, and effects to these issues are analyzed in detail. Resource concerns do not drive the development of alternatives, but are used to analyze and disclose the effects of various actions. Driving issues and resource concerns were identified through the Centennial Watershed Assessment and scoping process. Not all issues identified above are applicable to all 41 allotments and the unleased tracts in this EA.

Driving Issues

1. Forest and Woodland Health

Fire exclusion over the last century has resulted in a departure from the historic range of variability by altering the structure, density, and plant species composition within forest and grassland communities. As a result of fire exclusion, hazardous fuels have increased within areas historically maintained by moderate to high fire frequencies, aspen are declining due to conifer encroachment, and conifer stands have increased densities and are more susceptible to insect and disease outbreaks. High intensity fires are now more likely to occur in areas that historically experienced low intensity, frequent fires. Due to fuel continuity, fires are also more likely to have larger areas high fire severity, and less heterogeneity within severely burned areas compared to historic fires (Korb, 2005).

Forest health, fuels conditions and conifer encroachment have been determined to be causal factors in **not** meeting Standards on six allotments and unleased tracts:

Price Creek
Shambo Units
Fish Creek
Peet Creek
Tom Creek
Duff Creek AMP
Unleased tracts between Duff Creek and Tom Creek

Objectives

- Restore/maintain historic density, structure, and species composition of forest and woodland habitats.
- Improve forest health and increase resiliency to insects, disease, drought and wildland fire.
- Maintain/enhance existing aspen and whitebark pine stands and promote successful regeneration of aspen and whitebark pine.
- Allow fires to burn more naturally to maintain/restore forest health and reduce fuel accumulations.

2. Riparian, Wetland, and Aquatic Habitat and Associated Species

"Riparian and Wetland Areas are in Proper Functioning Condition (PFC)" is identified as one of the Western Montana Standards for Rangeland Health. PFC is defined as the ability of a stream or wetland to perform its riparian functions. These functions include sediment filtering, bank building, water storage, aquifer recharge and hydrologic energy dissipation. Streams or wetlands that are categorized as Functioning-at-Risk (FAR) with an upward trend also meet the riparian health Standard. The indicators used to determine riparian health are discussed in the Centennial Watershed Assessment Report.

Riparian habitats are used by approximately 75% of all wildlife species in this area for at least some portion of their annual life cycle. Streams in the Centennial Watershed provide habitat for seven native fish species including westslope cutthroat trout and four non native trout.

The riparian health standard was **not** met on six allotments:

Fish Creek	Brundage Creek
Phalarope East	Brundage Bridge
Passmore SGC	Rody Individual

Documented concerns from the Assessment Report include expansion of conifers into riparian habitat, decreased composition of deep rooted riparian vegetation, alteration of stream channels, and sedimentation.

Objectives

- Restore deciduous woody habitat types (aspen, willow) in riparian areas that have been invaded by conifer trees.
- Increase deep rooted riparian vegetation (sedges, willows) where decreased composition was documented.
- Restore stream dimension, pattern and profile to the natural range of variation where concerns were documented.
- Reduce sediment loads where uses on public lands are causing increased sediment. (eg. Red Rock River within Brundage Bridge Allotment, Jones Creek within the Passmore SGC Allotment, Road Cut along East Fork of Price Creek)
- Improve herbaceous vegetation for waterfowl nesting cover along Red Rock River.
- Maintain or enhance habitat for westslope cutthroat trout (WCT) in occupied streams within the watershed.

3. Upland Health, Upland Habitat and Associated Species

"Uplands are in proper functioning condition" is identified as one of the Western Montana Standards for Rangeland Health. The determination of upland health was based on the evaluation of three criteria: degree of soil stability and watershed function, nutrient cycles and energy flows, and available recovery mechanisms. The indicators used to determine upland health are discussed in the Centennial Watershed Assessment Report.

The upland health standard was **not** met on three allotments:

Phalarope East
Munday Reservoir
Ritchie SGC

Within the three allotments that did not meet the Upland Health Standard as well as in other site specific areas within the Centennial Watershed, the relative dominance of the cool season grasses has shifted to shrubby species. This affects the hydrologic cycle (precipitation infiltration) and wildlife habitat. Other concerns include decadence and/or dying of low sage throughout the valley bottom (determined to be drought related), conifer expansion into sagebrush habitats, presence of noxious and invasive plant species, and special status species plant habitat.

Objectives:

- Increase cover and frequency of native perennial cool season herbaceous species where concerns were documented.
- Restore or maintain grassland and shrubland habitat types that have conifer expansion.
- Prevent and reduce noxious weed and invasive species infestations.
- Create early seral conditions within the sand dunes to provide habitat for endemic special status plant species.
- Maintain residual herbaceous cover for ground nesting birds, specifically sage grouse.
- Manage sagebrush habitats so that 70% or more of potential big sagebrush communities provide the vegetation composition and structure to sustain sage grouse populations and other sagebrush obligate species such as antelope and pygmy rabbits.
- Maintain 15-25% sagebrush canopy cover and herbaceous cover conducive to nest and brood rearing success surrounding leks, as applicable within site potential.

Resource Concerns

1. Threatened & Endangered (T&E) Species and Migration Corridors

Conifer forests are important for big game security cover, migration corridors, and grizzly bear and lynx dispersal. Several thousand elk use the Centennial Mountain range for seasonal migration between summer and winter habitat. The Centennial landscape represents a local hotspot for diversity and an important wildlife corridor between Yellowstone and the Central Idaho Wilderness complex (Povilitis & Mahr 1998).

Road density management is essential to maintaining suitable grizzly bear habitat and should be limited to less than 1 mile of road per square mile. Currently, road densities are below 1 mile of road per square mile in the Centennial watershed. Several grizzly bear sightings have been reported within the watershed near Odell Creek and Alaska Basin. No reproduction has been confirmed and use is considered transient. The Centennials also provide the greatest potential habitat for Canada lynx within lands administered by the Dillon Field Office, however, occupancy has not been confirmed. The Wildlife Conservation Society, with cooperative funding from the BLM, is currently conducting a study within the watershed to determine occupancy and uses by large carnivores including grizzly bears, lynx and wolves. The current wintering population of elk in the watershed is around 1500-2000 with several thousand also traveling through the valley during migration to seasonal habitats (pers. comm. Brannon 2004).

Objectives

- Maintain adequate cover in travel corridors along the continental divide for Canada lynx, grizzly bear, all other large carnivores and elk.
- Improve whitebark pine stands and stimulate regeneration for grizzly bear habitat.
- Maintain open road densities below 1 mile/sq mile, consistent with the Grizzly Bear Recovery Plan (GBRP) and the Lynx Conservation Assessment and Strategy (LCAS).

- Improve foraging and denning habitat for lynx by creating denning habitat adjacent to foraging habitat.
- Enhance and improve aspen regeneration to benefit large carnivores, ungulates and migratory birds.
- Minimize disturbance during the nesting season for trumpeter swans to maximize reproductive success.

2. Cultural Resources

A detailed summary and description of the cultural resources occurring on each allotment in the Centennial Watershed is on file in the Dillon Field Office.

Objectives

- Preserve and protect significant cultural resources and ensure that they are available for appropriate uses by present and future generations.
- Reduce imminent threats from natural or human-caused deterioration, or potential conflict with other resource uses.

3. Air Quality

The BLM is an active participant in the Montana/Idaho Airshed Group Smoke Management Program and follows the Environmental Protection Agency's 1998 Interim Air Quality Policy for Wildland and Prescribed Fires through the development and implementation of burn plans.

Objective

- Maintain air quality standards for a Class 1 airshed (Red Rock Lakes National Wildlife Refuge) as determined by Department of Environmental Quality (DEQ) and the Idaho/Montana Airshed group.

4. Socioeconomics

Utilization of timber resources from public lands has historically resulted in an economic benefit in both Beaverhead and Madison Counties until the recent past. While timber harvest activity has been less frequent within the Centennial Watershed, the potential for utilization of commercial forest products still exists.

Many ranches that hold grazing permits on public lands administered by the BLM have developed operations that tightly weave public land grazing preferences together with private land management. For these ranches, calving, breeding, haying, feeding, shipping, summer pasturing, and marketing schedules have evolved in tandem with the stocking rates and season of use on the public land allotments. The BLM does not have access to financial or business records for the permittee that grazes livestock on the allotments included in the EA, therefore it is impossible to provide a detailed or quantifiable discussion of ranch operations or economic conditions of specific ranches.

BLM also does not have access to financial or business records of businesses in Lima and Dillon, which are likely to profit from recreational uses that occur in the Centennial Mountains. BLM also currently authorizes two commercial enterprises to provide outdoor recreation opportunities for the public. One of these commercial recreation providers has both his home and business headquarters in the area, and therefore provides employment opportunities and contributes to the local tax base. BLM reported nearly 27,000 recreation-related visits to the Centennial Mountains Special Recreation Management Area between October 1, 2003 and September 30, 2004.

Objective

- Continue to contribute to the local economy by providing an opportunity for sustainable uses on public land (primarily livestock grazing, utilization of forest products, and recreational opportunities).

5. Recreational Impacts/Access and Off Road Use

The Centennial Mountains Special Recreation Management Area was reported to receive nearly 27,000 recreational use visits in 2004. The majority of recreational use occurs during the fall big game hunting season. Additional recreation uses include backpacking, hiking and horseback use of the Continental Divide National Scenic Trail and other BLM maintained non-motorized trails in the area, and backcountry skiing. The proposed RMP prescribed management of this area to promote primitive and semi-primitive non-motorized recreation.

Although travel management prescriptions have been in place for this area since the early 1980's and a revised Travel Management Plan was completed in 2001, compliance with designated route restrictions continues to be a concern for both the visiting public and the BLM. Nearly the entire Centennial Mountains is legally closed to snowmobile use, but illegal use occurs throughout the range, mostly in the Hellroaring and Odell Creek drainages.

Objectives

- Maintain/enhance quality resource-based primitive and semi-primitive non-motorized recreation opportunities within the Centennial Mountains Wilderness Study Area (WSA).
- Maintain current authorized levels of motorized public recreational access while preserving a primitive and semi-primitive non-motorized recreational emphasis throughout the Centennial Watershed.
- Maintain/enhance opportunities for big game hunting, wildlife viewing, horseback riding, and other backcountry recreation.

6. Wilderness Characteristics

Approximately 23,054 acres of BLM-administered lands are recommended suitable for designation as wilderness out of a total of 27,691 total BLM acres within the WSA. As part of BLM's wilderness recommendations to the President in 1991, another 4,474 acres of adjacent USFS lands were recommended suitable for wilderness designation in the Mt. Jefferson area on the east end of the Centennials.

The Statewide Wilderness Study Report describes the area as being predominantly natural with outstanding opportunities for solitude and primitive and unconfined recreation (hiking, camping, and horseback riding). Other opportunities identified include hunting for elk, deer, moose, and black bear, exceptional wildflower viewing, wildlife photography, cross-country skiing, climbing, fishing, and outstanding scenery.

Objectives

- Enhance natural conditions, and improve opportunities for solitude and primitive and unconfined recreation, wherever possible through resource management activities.
- Allow fire to play a more natural role in the WSA.

7. Visual Resources

Visual Resource Management (VRM) classes are assigned through the land use planning process and identify the objectives for managing visual resources. The Centennial Mountains WSA is designated as Visual Resource Management (VRM) Class I, and the majority of the surrounding lands in the mountains are designated Class II or III. Objectives for management of these classes are:

- Class I: Preservation of the landscape is the primary management goal. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
- Class II: Retain the existing character of the landscape. Activities or modifications of the environment should not be evident or attract the attention of the casual observer. Changes should repeat the basic elements of form, line, color and texture found in the predominant natural features of the characteristic landscape.
- Class III: Partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. Changes caused by management activities may be evident but should not detract from the existing landscape.

Objective

- Manage scenic values in accordance with the objectives established for VRM classes.

8. Protection of Private Property from Wildland Fire.

There is a threat of wildland fire to the community of Lakeview and other residences within the watershed. Limited access and the relative remoteness of private residences put this property at an elevated risk of being threatened by wildland fire. Landscape-scale defensible space would aid in fire management efforts to protect private property. The implementation of Wildland Fire Use in the Centennial WSA and prescribing management ignited fire in key areas would reduce fuel accumulations and create buffer areas to slow or eliminate wildland fire spread onto private property. To maximize opportunities for a Wildland Fire Use and to protect Wildland Urban Interface (WUI), hazardous fuels reduction activities will be proposed.

Objective

- Protect Lakeview and other WUI areas from wildland fire.

1.5 Decisions to be Made

The BLM is preparing this EA to allow the Authorized Officer to make a reasoned and informed decision regarding mitigation of conifer expansion, unhealthy forest conditions, hazardous fuels conditions and revision or renewal of Term Grazing Permits (i.e. changing livestock management) with appropriate Terms and Conditions to initiate significant and measurable progress towards achieving the Land Health Standards and established goals and objectives within the Centennial Watershed, while achieving BLM's multiple use mission.

The Dillon Field Manager will choose the alternative that best addresses resource concerns identified by the BLM and issues identified through scoping, and allows for multiple use.

The Dillon Field Manager must also determine if the selected alternative is a major Federal Action that significantly affects the quality of the human environment. If he determines that it is, then an Environmental Impact Statement (EIS) must be prepared before the Centennial Management Plan can proceed.

1.6 Applicable Legal and Regulatory Requirements

- Title 43, Code of Federal Regulation, Part 4100
- Taylor Grazing Act of June 30, 1934, as amended
- Sikes Act of 1960, as amended (Habitat improvement on Public Land)
- National Historic Preservation Act of 1966, as amended
- Carlson-Foley Act of 1968 (Weed Control on Public Lands)
- National Environmental Policy Act of 1969 (NEPA)
- Endangered Species Act of 1973
- Federal Noxious Weed Act of 1974, as amended in 1988, 1994
- Federal Land Policy and Management Act of 1976 (FLPMA)
- Fishery Conservation and Management Act of 1976
- Clean Water Act of 1977
- Public Rangelands Improvement Act of October 25, 1978
- Fish and Wildlife Improvement Act of 1978
- State of Montana Streamside Management Zone Law of July 1991
- National Fire Plan of 2000
- Healthy Forests Initiative of 2002
- Healthy Forests Restoration Act of 2003

1.7 Coordination Requirements

According to 43 CFR subparts 4110, 4120, 4130 and 4160, coordination requirements include affected permittees or lessees, the interested public, the State having lands or responsible for managing resources within the area, other Federal or State resource management agencies, and the resource advisory council.

"Interested public" means an individual, group or organization that has submitted a written request to the Authorized Officer to be provided an opportunity to be involved in the decision making process for the management of livestock grazing on specific grazing allotments or has submitted written comments to the Authorized Officer regarding the management of livestock grazing on a specific allotment.

Following the Centennial Watershed Assessment Report and Determination of Standards, BLM met with other federal agencies, state agencies, permittees and the interested public while developing this EA. A full list of persons and agencies consulted is in Chapter 5.

2.0 Description of Alternatives

This chapter describes the alternative development process, alternatives considered but eliminated from further analysis, and alternatives that will be carried forward and fully analyzed. The three alternatives that will be fully analyzed are the No Action (continuation of current management) Alternative and two action alternatives. Various combinations of tools, allowable use levels, grazing strategies and projects were discussed at length and carefully considered during scoping and during the formulation of the alternatives by the ID team.

2.1 Process Used to Formulate Alternatives

The development of management alternatives for the Centennial Watershed was guided by provisions of FLPMA and NEPA, as well as planning criteria listed in Chapter 1. Other laws, as well as BLM planning regulations and policy, also directed alternative considerations and focused the alternatives on appropriate watershed-level decisions. Chapter 1 discusses the driving issues and resource concerns considered during the alternative development. The Affected Environment (Chapter 3) discusses resource concerns and other factors considered during alternative development.

2.2 Alternatives Considered but Eliminated from Further Analysis

Analysis of alternatives that would not make significant progress towards meeting the objectives of the proposed action or alternatives not consistent with the intent of current BLM legal and regulatory requirements or policy are not carried through. Alternatives proposing exclusive production or protection of one resource at the expense of other resources were not considered. FLPMA mandates the BLM to manage public lands for multiple use and sustained yield. This eliminates alternatives such as closing all public land to livestock grazing or oil and gas leasing, or managing only for wildlife values at the exclusion of other considerations. In addition, resource conditions do not warrant watershed area-wide prohibitions of any particular use. Each alternative considered in this EA allows for some level of support, protection, and/or use of all resources present in the planning area.

2.2.1 Eliminating livestock grazing from all BLM-administered lands in the Centennial Watershed was considered, but eliminated from detailed study because it does not meet the purpose and need of this EA, it was previously analyzed in the Mountain Foothills EIS (March 1980), it will not meet the objectives for this planning effort and it is not consistent with the intent of other applicable acts, laws, and policies.

2.2.2 Fencing Lima Reservoir to obtain livestock control in the allotments along the reservoir was considered, but eliminated from detailed study because:

- Parcels of privately owned land are intermingled with public land around the reservoir, therefore, livestock could still access the reservoir from these private lands and the livestock would likely be trapped inside the fence.
- Lima Reservoir was designated as a "public water reserve" for irrigation and livestock watering purposes.
- Water availability is an issue in most allotments along the reservoir.

- The cost of constructing and maintaining approximately 40 miles of fence around or along the reservoir is economically prohibitive to the BLM.

2.2.3 Authorizing off highway vehicle (OHV) use in the sand dunes to destabilize the dunes and create habitat for endemic special status plant species was considered, but eliminated from further analysis because:

- The likelihood of introducing noxious and invasive species into this fragile area is high.
- Controlling the amount, timing and location of use would be logistically difficult.
- Compliance and management of this use would be economically prohibitive.
- During scoping, the BLM received many public comments opposed to OHV use in this area.

2.2.4 The request to allow long term access utilizing temporary roads or those closed under the Centennial Travel Management Plan for firewood or other secondary wood products was considered, but eliminated from detailed study. Under the terms and conditions of the Biological Opinion for the RMP for grizzly bear management all temporary roads or currently closed roads are to be rendered un-accessible for vehicle access within 2 years of the completion of harvest activity.

2.2.5 Implementing a Wildland Fire Use Plan in areas outside of the WSA was considered, but eliminated from detailed study due to values at risk, including private property and residences, and the continuity of fuel in the Centennial Valley.

2.3 Description of Alternatives

2.3.1 Features Common to all Alternatives, Including the No Action

Forest Health Treatments:

- A Wildland Fire Use Plan will be developed for the Centennial Mountains WSA, in compliance with management direction provided in the 2004 Dillon Fire Management Plan and the proposed Dillon RMP, to maintain and restore forest health and reduce fuels accumulations. The plan would allow naturally occurring fires to burn under defined parameters to meet resource objectives. Fires that do not fall within the defined parameters or are a threat to public safety and private land will be suppressed.
- A corridor along the Price-Peet Road will have dead/dying trees removed which pose a safety hazard to the public by potentially falling onto the road.
- The Centennial Mountains WSA boundary will be signed as off-limits to firewood cutting.

Roads:

- Travel restrictions under the Centennial Travel Management plan will be implemented and restrictions will remain in place for public firewood removal and removal of other forest products.
- Under all alternatives, approximately 600’ of the Price Creek Road (BLM Road # 1806) will be relocated to the west where a stream meander is cutting into the

road. The road is unsafe for public travel and is resulting in accelerated erosion as well as increased sediment inputs to Price Creek. The existing road will be recontoured and revegetated with native seed.

Livestock Management:

- Term Grazing Permits will be renewed with no new terms and conditions for the allotments determined to be meeting Land Health Standards, had no identified site specific concerns related to current management and needed no changes to facilitate improved management. These allotments include the Coconougher Individual, Shambo Units, Peet Creek, Long Creek AMP, Centennial, Duff Creek AMP, Red Rock, 7L SGC, Bean Place, Centennial Isolated, Curlew, Davis Common SGC, Jones SGC, Long Creek SGC, Lousy Springs, Mata-Stib SGC, McCandless Brothers, Monida-Corral Creek, Rody Individual, East Clover Creek and Shineberger allotments. Term permits for other allotments may be modified as analyzed in this document.
- Temporary electric fence, livestock supplement placement, riding, and herding are encouraged and if warranted, may be required as means of improving livestock distribution in all alternatives. When used, livestock supplement should be placed on ridges or terraces at least ¼ mile from the nearest livestock water source in areas naturally devoid of vegetation.
- Permittees and lessees on all allotments along Lima Reservoir will be encouraged to work together to control livestock. As the water recedes, cattle can cross the reservoir and drift into areas in which they are not authorized. Operators should communicate these problems immediately once they are discovered and the owners of the livestock are responsible to move them back to areas in which they have proper authorization upon notification. Owners of livestock that cause continuous or continually recurring problems and do not take actions to control their livestock will be asked to remove the cattle from their public land permits for the season to an area where they can be controlled and/or trespass action will be initiated.

Recreation Management: The following projects were identified in the Centennial Mountains Travel Management Plan, completed in 2001. The impacts of these projects were considered in an EA at that time, and this document will consider these projects to be ongoing within this planning area.

- Beyond the existing closure point in the Corral Creek Road, the road will be maintained to correct the gullying and divert water to prevent recurring erosion problems. It may be seeded, or otherwise allowed to naturally re-vegetate to discourage erosion, prevent noxious weeds and reduce long-term maintenance costs.
- BLM will continue to maintain approximately 25 miles of non-motorized trails in the Centennial Mountains, including approximately 8 miles of the Continental Divide National Scenic Trail.
- BLM will work with Beaverhead County to provide roadside pull-outs where the county road crosses public lands between Lakeview and Monida to improve safety and convenience for trailer-towing vehicles. Hiker and horse-friendly gates

will be installed in two to four locations in existing fences in this area to better disperse visitor use through the hunting season.

- A legal trail easement will be pursued for upper Jones Creek trail in Section 34. If an agreement can not be negotiated, the trail will be re-routed to avoid private lands in that area.
- A primitive parking area will be provided at the Tipton-Winslow trailhead outside the WSA in conjunction with reclamation of the current unauthorized gravel pit. No toilet or other facilities will be provided there, consistent with the direction provided in the Wilderness EIS, and in keeping with the primitive character of the area.
- BLM will attempt to obliterate any user-created roads or trails developed through the unauthorized passage of vehicles within the planning area.
- Non-motorized trails identified for future maintenance by the BLM will be evaluated on a case-by-case basis to determine whether they followed the most appropriate route. Re-routes or reconstruction will be implemented as needed based on the following criteria: 1) whether the current route was causing resource damage, 2) projected long-term maintenance costs of that route over other potential routes, 3) user-friendliness, including grade, hazards, and surrounding aesthetics. Specific trails which will be considered for future re-route include the Nemesis Mountain trail, Tipton-Winslow trail, and the portion of the Continental Divide Trail from Hellroaring Creek to Keg Springs.

T&E Species: All forest and grazing treatments will be in compliance with the GBRP and the LCAS. Major BLM trailheads and access points will be posted to advise recreationists about proper food storage requirements to avoid back country conflicts.

Fisheries: Prescribed burns, commercial harvesting and road construction may require an extended buffer zone of up to 300' adjacent to fish bearing streams dependent on slope, gradient, and species of fish present.

Special Status Plants: Prior to any surface disturbing activities in suitable habitat, sites will be surveyed for special status plants. If plants are found, they will be avoided if a negative impact is determined through a biological evaluation.

Noxious Weeds: Management of noxious weeds will continue in cooperation with Beaverhead and Madison Counties, The Nature Conservancy, other federal and state agencies, private landowners and other partners.

Cultural Resources: As required by Section 106 of the National Historic Preservation Act, a Class III cultural resource inventory is required prior to the implementation of any proposed range or habitat improvement projects. Should significant cultural resources be identified, adverse impacts will be mitigated through project abandonment or redesign. Care will be taken to avoid and protect significant cultural resources and any standing structures (should they occur) during the course of any proposed prescribed fire treatments. In addition, personnel from the BLM should be notified of the presence and location of any cultural resources should they be encountered by any of the timber contractors or permittees during the course of operations on public lands.

Monitoring: Under all alternatives, resource monitoring will be conducted to measure progress toward meeting site-specific objectives. Monitoring will be done according to the monitoring plan shown as Appendix B.

2.3.2 Description of Alternative A - No Action (Continuation of Current Management)

No Action is defined here as *the continuation of current management.* This alternative will be analyzed to serve as baseline information for the Authorized Officer to make a reasoned and informed decision.

Within a corridor following along the Price-Peet Road, dead/dying trees that pose a public safety hazard by falling onto the road would be removed. This corridor is along a 4.5 mile stretch of the road beginning at approximately mile marker 3 and extending to the WSA boundary. Hazard trees within two tree heights on either side of the Price-Peet Road would be removed to provide a reasonable buffer for public safety from hazard trees. The "sale and removal of individual trees or small groups of trees which are dead, diseased, injured or which constitute and safety hazard, and where access for the removal requires no more than maintenance to existing roads" is a categorically excluded action which has been determined to not significantly affect the quality of the human environment, and therefore is considered a continuation of current management in this EA. Treatment would be conducted within 2 years of the Decision date and would strive to keep sighting distances from the Price-Peet Road to a minimum. Commercial material would be harvested and removed by the purchaser, and the remainder of the dead material would be decked along the Price-Peet Road for public firewood use.

As tree mortality continues, removal of hazard trees would occur on an as needed basis for up to 10 years. Within the Price-Peet Road corridor in the WSA, hazard trees that occur within one tree height of the road would be assessed on a case by case basis. If needed, government or contract crews would hand fall these trees. No permits would be authorized for the removal of this material.

Table 2: Alternative A Description of Forestry/Fuels Units

Unit Name	Acres	Objectives	Treatment Type
PC3a	204	Public safety	Commercial harvest

Alternative A has no proposed temporary road building or constructed stream crossings.

Livestock Grazing Management

Under Alternative A, livestock management would continue as per the Terms and Conditions contained in the current Term Grazing Permits. No new range improvement projects would be constructed. Existing livestock grazing management, as shown in Table 3, would continue on 41 allotments.

Table 3: Alternative A Livestock Grazing Allocation and Management

Allotment name, number, and category	Permittee	Season of Use	[1]Grazing System	Stocking Rate: cattle	BLM AUMs	BLM Acres	[2]Other Acres	Total Acres
Antelope Peak #20179 (I)	David Shuett	5/1 – 10/31	DR	4	567	2319	3471	5790
Cocanougher Individual # 10738 (I)	Raffety Cattle Co.	6/1 -10/31	Season Long	4.5	10	45	707	752
Fish Creek #20172 (I)	Ruby Dell Ranch Inc.	6/5 – 10/27	Used In Conj. With USFS	7.3	572	4184	3987	8171
[3]Long Crk AMP #20154 (I)	Matador	7/15 – 10/15	RR	3.3	1345	4408	1723	6131
Monida Hill #20023 (I)	Huntsman Ranch Co.	5/20 – 7/10	Alter. Spring	16	200	3219	0	3219
Munday Reservoir #20176 (I)	James and Elaine Munday	5/1 – 10/31	Season Long	6.1	79	480	10	490
Oxbow #20735 (I)	J Bar L Ranches	5/1 – 11/14	Rapid Rot.	3.1	871	2720	4375	7095
Passmore SGC #20183 (I)	Ann Simonsen	8/1 – 9/30	DR	5.2	16	83	0	83
[3]Peet Creek #10730 (I)	Matador	7/9 – 9/6	RR	19.6	241	4735	3071	7806
Phalarope East #20177 (I)	Huntsman Ranch Fam. LP	6/1 – 10/31	Season Long	9.7	409	3958	7172	11,130
Price Creek #30040 (I)	Arthur Thompson	6/15 – 10/15	RR	7.8	1874	14,527	5352	19,879
[3]Shambo Units #20152 (I)	Matador	7/10 – 10/30	RR	10.2	1146	11,634	2394	14,028
Brundage Creek #20708 (M)	Stibal Ranch	4/15 – 10/30	DR/Alter. Sea	4.3	912	3961	2786	6747
Centennial #20710 (M)	Centennial Livestock	7/25 – 10/20	DR	5.7	93	528	5110	5638
Duff Creek AMP #20688 (M)	Matador	7/1 – 10/15	RR	31.5	106	3343	2451	5794
Lima Reservoir #10151 (M)	Matador	8/10 – 11/30	DR	6.4	793	5103	5048	10,151
Mud Lake Field #30260 (M)	James & Elaine Munday	5/15 – 11/15	Season Long	7.5	36	269	0	269
Red Rock #30636 (M)	River Valley Ranches	6/1 – 6/14 8/10 – 8/23	RR	3.3	80	266	87	353
Saier Individual #20169 (M)	Volker & Lois Saier	9/1 – 9/30	DR	3.1	104	321	0	321
Sand Dunes #20732 (M)	Volker & Lois Saier	6/1 – 7/15	Spring	5.6	107	599	150	749

Allotment name, number, and category	Permittee	Season of Use	[1]Grazing System	Stocking Rate: cattle	BLM AUMs	BLM Acres	[2]Other Acres	Total Acres
7L SGC #20153 (C)	Matador	6/1 – 11/30	Season Long	1.9	174	342	34	376
Bean Place #10125 (C)	Huntsman Ranch Co.	5/15 – 10/23	Season Long	3.5	37	129	0	129
Brundage Bridge #20707 (C)	Stibal Ranch	5/1 – 11/14	Season Long	3.4	130	443	13	456
Centennial Isolated #20641 (C)	Centennial Livestock	5/1 – 12/15	Season Long	5	8	40	0	40
Cook Sheep Camp #00767 (C)	Eugene & Lois Walsh	6/16 – 10/7	Season Long	40.8	7	286	0	286
Curlew #20199 (C)	Buhler Land & Cattle Co.	6/2 – 9/29	Season Long	3.9	122	478	5	483
Davis SGC Comm #10737 (C)	Roaring Creek Ranch	6/1 – 10/15	Season Long	24.8	18	446	0	446
East Clover Creek #30651 (C)	Hess Land & Cattle	7/25 – 10/14	DR	12.5	38	476	0	476
Jones SGC #20731 (C)	Matador	5/1 – 11/15	Season Long	4.7	26	122	154	276
Long Creek SGC #20157 (C)	Matador	5/15 – 12/15	Season Long	2.9	41	117	43	160
Lousy Springs #00763 (C)	Stibal Ranch	5/1 – 10/14	Season Long	5.6	110	621	242	863
Mata-Stib SGC #10696 (C)	Stibal Ranch	5/1 – 12/15	Season Long	6	90	544	4	548
McCandless Bros. #20185 (C)	Alaska Basin Grazing Assoc.	6/1 – 10/31	Season Long	3.8	80	300	0	300
Monida-Corral Cr #00766 (C)	Huntsman Ranch Co.	6/1 – 11/30	Season Long	2.3	30	70	17	87
Morton Ind SGC #20163 (C)	Carroll & Nina Wainwright	5/15 – 11/14	Season Long	40.7	12	488	267	755
Munday East #20162 (C)	James & Elaine Munday	5/1 – 10/31	Season Long	6.9	48	333	0	333
Ritchie SGC #30610 (C)	Stibal Ranch	5/1 – 11/30	Season Long	6.4	25	160	0	160
Rody Individual #20685 (C)	Ann Simonsen	7/1 – 10/30	Season Long	5.6	20	112	40	152
Shineberger #20159 (C)	Lee Co. Martinell	5/15 – 11/14	Season Long	4.2	67	280	363	643

Allotment name, number , and category	Permittee	Season of Use	[1]Grazing System	Stocking Rate: cattle	BLM AUMs	BLM Acres	[2]Other Acres	Total Acres
Tom Creek #20701 (C)	Eugene & Lois Walsh	5/16 – 10/20	Season Long	42.5	10	425	0	425
Windmill #20733 (C)	J Bar L Ranches	5/15 – 11/14	Rapid Rot.	6.6	79	525	949	1474
TOTALS					**10,733**	**73,439**	**50,235**	**123,674**

[1] *Abbreviations: RR= rest rotation, DR = deferred rotation, I = Improve, M=Maintain, C=Custodial*

[2] *Other acres = the sum of USFS, State (DNRC) and private acres.*

[3] *Rangeland Health Determinations related to livestock grazing have been made on these allotments during the past five years and were not repeated during this assessment. Revised livestock grazing management has recently been implemented, and only forest health and fuels conditions were examined during this assessment.*

Under this alternative, all other currently authorized activities (recreation permits, mineral development, etc.) would continue as permitted.

2.3.3 Features Common to Alternatives B and C

Forest Health Treatments:

- Both action alternatives will analyze utilizing conventional ground-based harvesting equipment and/or helicopter logging. Conventional ground based harvest techniques would include hand or machine falling and then tractor and/or cable yarding the merchantable timber to landings. Helicopter harvesting would include hand or machine falling and then helicopter yarding the merchantable timber to landings. Harvest activity and associated operations would be permitted between December 2 and October 15.
- With the exception of Unit PC3, an average of 2 to 5 existing snags or green recruitment snags would be left per acre within all commercial treatment units.
- If market conditions permit, biomass material may be removed from within mechanical treatment units. Sufficient residual biomass material would be left on site to maintain nutrient recycling and desirable microsite conditions.
- Log landings would be reseeded with native grasses/forbs.
- One season of rest from livestock grazing is usually needed prior to burning to allow sufficient fine fuels (grasses) to ensure a successful prescribed burn. BLM policy requires a minimum of 2 growing seasons of rest from livestock grazing following burns to allow re-growth and re-establishment of vegetation in the treated area.
- Treatment by prescribed fire would only be completed where the ground fuels and conifer trees are in a condition that would meet the prescription objectives. Prescribed burning will require an approved burn plan prior to implementation. In areas where vegetation conditions would not allow prescribed fire to achieve the objectives alone, a combination of mechanical treatments followed by prescribed burning may be utilized. In conifer encroachment units, an emphasis will be placed on maintaining 50% of the mature sagebrush canopy cover.
- The implementation of prescribed fire treatments would occur over the next 5-10 years. Units would be burned as fuel and weather conditions allow, but consideration would be given to the effects of temporarily restricting public access in portions of the Centennial Mountains while prescribed burns are in

progress. Fire managers would coordinate the timing of prescribed fire treatments (seasonally) and the area treated per year to minimize public resource use conflicts.

- In Harvest/Burn units, burning would take place within three years following harvest to allow sufficient curing of fuels and to ensure consumption of residual slash.

Livestock Management Changes

- Under all action alternatives, annual utilization guidelines on cool season bunch grasses would be 50% (to maintain vigor) using grazed/ungrazed methodology OR when livestock use on sedges averages 4 inches along the greenline (to prevent excessive trailing along streams), whichever occurs first. This would apply to applicable pastures used any time between 5/1 and 9/29. The annual use objective for palatable woody species (such as willows and aspen) would be when cumulative use of current year's growth reaches approximately 50%. This would apply to applicable pastures used any time between 9/30 and 12/31. These annual use guidelines would be used as a tool to help determine pasture moves. This would be applicable to all allotments included in the Centennial Watershed, except for those that already have allowable use levels or guidelines identified in existing AMPs (Price Creek, Peet Creek, Long Creek and Shambo Units). These existing guidelines are available in the Allotment Files at the Dillon Field Office.
- Up to 5 years would be allowed to phase in projects and operational changes described under action alternatives. This would increase economical and logistic feasibility for permittees and the BLM.
- Term grazing permits would be amended to state that depredation losses from gray wolves and grizzly bears are possible.

Roads:

- Existing roads that do not meet State of Montana Best Management Practices (BMP) standards would not be used for forest product removal.
- Construction standards on new temporary roads would be to the minimum required for safe transport of merchantable material. Road locations would be designed to minimize stream or wet area crossings.
- All currently closed two track roads and temporary roads that are used for forest health treatments would be closed within 2 years post-treatment by recontouring and/or placing slash material on the road surface to preclude vehicle use, and reseeding with native grasses/forbs. The latter tool has been used to close roads in the Dillon Field Office for over 15 years with nearly 100% success in prohibiting unauthorized road use, and has also kept post treatment sediment movement from the roads to the same levels as would be expected when recontouring.

Stream Crossings:

- All applicable State and Federal Permits would be obtained and all permit conditions would be followed. State of Montana BMPs and the Streamside Management Zone (SMZ) laws would be followed for all forest health treatments or road activities in or near riparian areas.

- Projects which are likely to result in turbidity impacts would require review to determine whether State of Montana 318 Authorizations (Short Term Water Quality standards for Turbidity) are necessary.
- New stream crossings on existing or new temporary roads would be either culvert installation or temporary bridge crossings, whichever better fits the resource concerns. Upon completion of use, new crossings on BLM lands would be removed and reclaimed.
- The culvert on the West Fork of Price Creek in T14S, R4W, sec.6, SW ¼ will be removed and rehabilitated. This crossing forms an obstruction to flow during high runoff.

Water Developments:

- All applicable State and Federal Permits would be obtained and all permit conditions would be followed. A Jurisdictional Determination would be sought to determine if spring sources are "Waters of the United States". New spring developments or drilled wells would require applications for water rights.
- Springs and natural wet meadows would be protected when developing water for livestock. Spring sources would be fenced to exclude livestock use on all developed springs. Adequate water would be left at the spring source to maintain wetland hydrology, hydric soils, and hydric vegetation. Failure to maintain functional wetland characteristics in spring developments could cause the provisions of the "no net loss of wetlands" policy to be initiated, which requires wetland replacement proportions of 1.5-3 acres for every acre lost.
- Any water developments and associated stock tanks that are no longer in use would be removed, but fence exclosures to protect the spring source would be maintained.

Fences: Any new or replacement boundary fences would normally be a 4-wire fence and any new interior (pasture) fences would normally consist of 3 wires. All fences would be in conformance with BLM Fencing Handbook H-1741-1. Existing fences on public land that impede wildlife movement would be modified or rebuilt to BLM specifications as resources allow.

Centennial Sandhills Proposed ACEC: Management strategies to destabilize sand dunes and create early seral habitat for special status plants would be employed under both action alternatives. Initially, up to 200 acres with high sagebrush and grass cover on moderate terrain within the proposed ACEC would be treated with prescribed fire followed by short-term high intensity grazing for a period of two years. Follow-up monitoring would determine the effectiveness of this strategy in providing early seral habitat for painted milkvetch, Fendler cat's-eye and sand wildrye. Adaptive management would be used to implement the same treatments or a variation thereof on the rest of the sand dune habitat within the proposed ACEC with a target fire return interval of 20 -30 years.

Sage Grouse: Minimize disturbance surrounding sage grouse leks during the breeding season (March 15 – May 15).

Trumpeter Swans: Minimize disturbance surrounding trumpeter swan nesting territories during the breeding season. (April 15 – June 15). Fencing of individual wetlands and construction of nesting islands to enhance nesting territories may be completed depending on the results of nesting success monitoring.

2.3.4 Description of Alternative B

Forest Health Treatments

Alternative B would allow salvage harvest of dead/dying timber, sanitation harvest of live trees, harvest of conifers in and around aspen stands, thinning of high density conifer stands, and opportunities for public utilization of forest products. Alternative B would also implement prescribed burns to reduce residual slash after harvest activities, protect WUI areas, promote aspen and whitebark pine regeneration, and reduce conifer expansion into aspen, sagebrush and grasslands. The following tables outline the proposed units, objectives, treatment types, and prescriptions for forest health treatments in Alternative B. Unit locations and boundaries are shown on the Alternative B – Forestry/Fuels Units map found in Appendix A. Forest health treatments are displayed on an allotment basis in Table 9.

Table 4: Alternative B Description of Forestry/Fuels Units

Unit Name	Acres	Objective(s)*	Treatment Type(s)
Cor1	130	↓ conifer encroachment	Non-commercial mechanical Prescribed fire
Cor2	196	↓ conifer encroachment	Non-commercial mechanical Prescribed fire
PC1	411	↑ forest health ↑ aspen and whitebark pine regen.	Commercial harvest Prescribed fire
PC2	579	↑ forest health ↑ aspen regen.	Commercial harvest Prescribed fire
PC3	33	Public safety Commercial firewood availability	Commercial harvest
PC4	105	↑ forest health	Commercial harvest Prescribed fire
PC5	245	↑ whitebark pine regen.	Non-commercial mechanical Prescribed fire
PC6	644	↑ aspen regen.	Non-commercial mechanical Prescribed fire
PC7	10	Public post and pole availability	Post and pole permits
BC1	1067	↑ forest health Create Wildland Fire Use buffer	Prescribed fire
BC2	89	↑ forest health Create Wildland Fire Use buffer	Prescribed fire
BC3	190	↑ forest health	Prescribed fire
BC4	54	↑ forest health ↑ aspen regen.	Commercial harvest Prescribed fire
BC5	103	↑ forest health	Commercial harvest Prescribed fire

Unit Name	Acres	Objective(s)*	Treatment Type(s)
BC6	31	↑ forest health	Commercial harvest (helicopter yarding only) Prescribed fire
Curry1	90	↑ forest health ↑ aspen regen.	Commercial harvest (helicopter yarding only)
LV1	3756	↑ forest health Create Wildland Fire Use buffer Protect Wildland Urban Interface	Non-commercial mechanical Prescribed fire
LV2	74	↑ forest health Protect Wildland Urban Interface	Commercial harvest Prescribed fire
HR1	992	↑ forest health Create Wildland Fire Use buffer Protect Wildland Urban Interface	Non-commercial mechanical Prescribed fire
SD1	693	↑ rare plant habitat	Prescribed fire
SD2	364	↑ rare plant habitat	Prescribed fire
SD3	444	↑ rare plant habitat	Prescribed fire
N1	139	↑ forest health ↓ conifer encroachment	Commercial harvest Prescribed fire
N2	111	↑ forest health ↓ conifer encroachment	Commercial harvest Prescribed fire

* Abbreviations: ↑=increase ↓=decrease

Table 5: Alternative B Silvicultural Prescriptions

Stand Type	Prescription*
Aspen	Cut all conifers within 2 aspen tree heights of viable aspen clones. All non-merchantable material would be left on site to protect aspen sprouts from browsing. Follow up prescribed burning would aim to consume the fine hazardous fuels but retain the larger woody component.
Lodgepole Pine >6" diameter at breast height (DBH) *Note: Mountain pine beetle is affected lodgepole stands by attacks and kils lodgepole in patches. These patches of dead/dying lodgepole are intermixed with green un-infested lodgepole that is susceptible to future mountain pine beetle attack.*	Harvest all live infested trees and 80% of dead/dying trees. Harvest patches of green un-infested lodgepole up to 5 acres in size, focusing on stands with higher susceptibility to mountain pine beetle attack, and leaving groups of 10-25 non-infested trees per acre where feasible. Patch cuts would be separated by leave patches of non-infested lodgepole up to 5 acres in size, where these occur. 50% of green un-infested lodgepole would be left untreated. Patch boundaries would be shaped to blend with the topography. Some slash and non-merchantable material would be piled to create lynx denning structures. Any Douglas-fir intermixed in these stands would be left on a 20' x 20' spacing.

Stand Type	Prescription*
Lodgepole Pine <6" DBH	Do not treat and avoid skid trail disturbance, except in Unit PC7. In Unit PC7, trees would be thinned to a residual spacing of 10'-12'. Slash would be lopped to 18" above the ground or hand piled and burned.
Dead/Dying Douglas-fir	Cut 90% of dead/dying trees <19" DBH. Leave all Douglas-fir snags >20" DBH unless they present safety hazard. Harvest all green Douglas-fir with evidence of successful beetle attack.
Green Douglas-fir and Mixed Conifer Stands	Thin Douglas-fir from below to an average residual basal area of 100ft^2/acre where trees occur. Associated species intermixed in Douglas-fir stands: Lodgepole pine-treat as described above; Subalpine fir-cut; Engelmann spruce-where it occurs in a patch greater than 1 acre in size, patch cut in up to 0.5 acre blocks. Leave all Engelmann spruce in SMZs, and if in patches less than 1 acre in size.
Uniform size Green Douglas-fir Stands <14" DBH	Thin from below to an average residual basal area of 100ft^2/acre where trees occur.

* Assume removal of merchantable products where practical from treatment units.

Prescribed fire Units HR1, LV1, and BC1 are designed to prevent the east-west spread of wildland fire across the Centennial range and protect the WUI within the Centennial Valley. Unit boundaries are drawn using natural boundaries to preserve wilderness integrity. Within each unit, smaller units will be burned according to prescription and using natural barriers. Spots that occur within the main unit boundary may be allowed to burn if deemed safe and meeting resource objectives by the burn boss.

Unit PC3 would be made available to commercial firewood contractors for the permitted removal of dead/dying trees within 200' of the main Price-Peet Road, for up to 10 years after the completion of major activity in the area. This time period would allow for the removal of any additional mortality along the road.

Unit PC7 would be made available for permitted personal use cutting of post and poles. The existing closed road into the upper portion of this unit would be re-opened for up to 2 years to provide access for hand or small tractor/4 wheeler skidding in the upper portion of this unit, and then would be closed. After the road is closed, access to Unit PC7 would be from the Price-Peet Road only, which would limit activity to the lower portion of the unit.

For commercial harvest units, conventional ground-based harvest equipment would require yarding distances of up to 1,000' or less for practical operations and access to log landings. Material in the Price Creek drainage would be transported on Price-Peet Road #1805. If the helicopter option is used, the existing closed road in Unit PC7 would be re-opened to provide landing space off of the main Price-Peet Road for helicopter decking of logs.

Under Alternative B, some access to Units PC1, PC2 and PC4 would be made available to the general public for the permitted removal of firewood or other minor forest products. When harvesting operations are completed by the purchaser, gates would be installed on pre-existing roads which have both access to residual firewood and the least potential for resource conflicts. These roads would be opened to the public on a one-at-a-time basis for up to 2 years, and the road would be closed when firewood or other forest product removal is completed. The gate(s) would then be removed and the road would be either physically closed or recontoured, and reseeded. Temporary roads would be closed or reclaimed upon the completion of harvest activity, and would not be available for this activity.

Where access for firewood or other forest product materials is impractical or creates unacceptable resource conflicts, residual slash material would be burned upon the completion of the purchaser's activity when conditions permit.

The road and crossing requirements for the Price Creek drainage are shown on Table 6 below and on maps in Appendix A. The Price-Peet timber sale in the 1980s treated 64 acres per mile of road. Under Alternative B, conventional yarding would access 140 acres per mile of road, and helicopter yarding would access 223 acres per mile of road. No additional new temporary roads or crossings are required to access the other proposed units in this alternative.

Table 6: Alternative B Price Creek Roads and Crossings

Unit Name	**Yarding Type**	**Existing Roads* (miles)**	**New Temp. Roads (miles)**	**Stream Crossings West Fork Price Creek**			**Stream Crossings Main Fork Price Creek**		
				Existing	**Rebuilt**	**New**	**Existing**	**Rebuilt**	**New**
PC1	Conventional	1.7	1.2	0	0	0	N/A		
	Helicopter	1.5	0.0	0	0	0	N/A		
PC2	Conventional	1.2	2.0	0	0	1	0	0	1
	Helicopter	1.0	1.4	0	0	1	0	0	1
PC3	Conventional	Would use existing Price-Peet Road. No new temporary roads or crossings would be constructed.							
	Helicopter								
PC4	Conventional	0.1	0.6	0	0	0	0	0	0
	Helicopter	0.6	0.5	0	0	0	1	0	0
TOTALS	**Conventional**	**3.0**	**4.8**	**0**	**0**	**1**	**0**	**0**	**1**
	Helicopter	**3.1**	**1.8**	**0**	**0**	**1**	**1**	**0**	**1**

* These are roads that currently exist and are closed under the Centennial Travel Management Plan. They will remain closed following project completion.

Unit BC5 would require 1.0 mile of new temporary road construction if conventional harvest is used (no crossings are required). No new roads or crossings would be required if helicopter harvest is utilized in Unit BC5. All other units would be accessed using existing roads only.

Livestock Grazing Management

This alternative would include adjustments to grazing management and/or addition of structural range improvement projects on the Antelope Peak, Fish Creek, Monida Hill, Munday Reservoir, Oxbow, Passmore SGC, Phalarope East, Price Creek, Brundage Creek, Lima Reservoir, Mud Lake Field, Saier Individual, Sand Dunes, Brundage Bridge, Cook Sheep Camp, Morton Ind. SGC, Munday East, Ritchie SGC, Tom Creek, and Windmill allotments. The 21 other allotments within the watershed would continue to be managed as described under Alternative A (Section 2.3.2) and Section 2.3.1, with the addition of the allowable use guidelines defined above, where applicable. Forest health treatments are shown by allotment Table 9. All acres displayed in the description of alternatives include BLM administered lands only. The proposed projects are shown on individual Allotment Maps in Appendix A.

Antelope Peak #20179

Management

- Season of use would be changed from 5/1-10/31 to 6/1-11/30. Authorized use would remain at 567 active AUMs.
- Allotment would be managed under a two pasture deferred rotation system. Each pasture would be deferred from livestock grazing until after seed ripe of perennial cool season grasses (August 10) every other year.

	North	South
Year 1	June 1 – August 10	August 11 – Nov. 30
Year 2	August 11 – Nov. 30	June 1 – August 10

Fish Creek #20172

Management

- Allotment would be managed under a two unit deferred rotation system (spring or fall) as shown below.
- Authorized use would remain at 572 active AUMs.

	West Unit (Fish Creek)	East Unit (Metzel Creek
Year 1	450 Cattle 6/13 – 7/2 700 Cattle 7/3 – 7/16	700 Cattle 9/30 - 10/22
Year 2	700 Cattle 9/30 – 10/22	450 Cattle 6/13 - 7/2 700 Cattle 7/3 – 7/16

- The allotment is used in conjunction with the adjoining Forest Service allotment. Summer grazing occurs on the Forest Service allotment. No cattle would be left on the BLM allotment during the summer months as has been done in the past.
- The season of use would be changed from 6/5 – 10/27 to 6/13 – 10/22.
- No additional fences would be built initially. Control of livestock would be by riding and salt and supplement placement. There may be some overlap of use in the units because of the lack of fences between the units, but it is expected to be minimal. If determined through the first two grazing cycles that a pasture fence is needed to mitigate excessive drift, approximately 3 miles of pasture fence would be constructed.

Projects

- Off site water would be developed from a spring in the upper drainage of Metzel Creek at T.13 S., R. 3 W., section 1, NW¼ NE¼ . This would include approximately 1 mile of pipeline and a water trough.
- A hardened crossing would be constructed on lower Fish Creek near the fenceline (T.13 S., R. 3 W., section13, NE ¼ SE 1/4). The cattle trail up and down the fence for about three days during weaning each fall impacting the stream banks along this area.

Optional Project

- Approximately 1 mile of new fence (3 wire) would be constructed on BLM administered lands and approximately 2 miles of new fence would be constructed on State Lands. This fence would be located at T. 13 S., R. 3 W., section 2 E½ (BLM land) and sections 11 and 14 E½ (State Land).

Munday Reservoir #21076, Mud Lake Field #30260 and Munday East #20162

Management

- The Munday Reservoir, Mud Lake Field and Munday East Allotments would be combined into one allotment called the Mud Lake Allotment #30260. These three adjoining allotments are licensed to the same operator and used with the same livestock herd. Combining these allotments would allow for a four pasture deferred rotation system which would include BLM, State and private land.
- Authorization would be 166 active AUMs of use on the public land and billed as a custodial allotment.

	Middle	Reservoir	East	West
Year 1	8/16 – 9/22	9/23 – 10/31	6/1 – 7/7	7/8 – 8/15
Year 2	7/8 – 8/15	8/16 – 9/22	9/23 – 10/31	6/1 – 7/7
Year 3	6/1 – 7/7	7/8 – 8/15	8/16 – 9/22	9/23 – 10/31
Repeat				

Oxbow #20735 and Windmill # 20733

Management

- Combine Oxbow and Windmill allotments into one allotment called Oxbow #20735.
- The management would be a short duration, rapid rotation system. There would be 26 different units and each unit would be grazed by livestock from 3 to 10 days depending on size of units and time of year. Each unit would be grazed only once each year. Early season (rapid growth) grazing would be 2 to 7 days and 5 to 14 days in the non growing season, again depending on pasture size. Each unit could be grazed each year, but the timing of grazing would be changed each year to promote or retain plant vigor.
- Authorization would be for up to 450 cattle from May 15 to November 16 for up to 948 active AUMs.
- Cooperative management would continue between BLM, operator, MT DNRC, Red Rock Refuge and The Nature Conservancy. Annual meetings would be held to determine annual pasture rotation, coordinate projects and share monitoring

data and progress reports.

- Critical nest areas and times (4/15 – 6/15) for trumpeter swans would be avoided by either not authorizing use until after June 15 in the pastures where the nests are located, or if use is authorized prior to June 15, it would only occur one in three years. Because of the concentration of nest areas and the number of units in this allotment it would be necessary to occasionally authorize livestock use prior to June 15 to allow proper vegetative management in the allotment as a whole. This would be a priority issue to be discussed and worked out each year at the annual cooperative operating meeting.
- Allotment fences would be 2 or 3 strand high tensile electric.

Projects

- The 400 unit, Ditch field, Horse pasture and Falcon unit could be cross fenced if deemed necessary for livestock distribution. This would include up to 2 miles of fence.
- Pipelines and tanks would be installed in six pastures to provide off-site water and reduce the need to water in Red Rock Creek. These pastures include Sandhill, Falcon, River, North Kennedy, South Kennedy and Winslow.
- All pastures could have sub units created with temporary electric fences. Each sub-unit would be grazed from 3 to 10 days.

Vegetative Treatments (Special Status Plants)

- Up to 181 acres of sand dunes habitat in the Windmill unit within the proposed Centennial Sand Dunes ACEC could be treated with prescribed fire and prescribed livestock grazing as described in Section 2.3.3.

Passmore #20193

Management

- Authorized use would remain at 16 active AUMs.

	Passmore
Year 1	9/1 – 9/15 32 Cattle
Year 2	Rest

Projects

- Construct or reconstruct approximately ¾ mile of 4 wire standard type fence around the allotment to allow prescriptive management.

Phalorope East #20177 and Monida Hill #20023

Management

- The Monida Hill and Phalarope East allotments would be combined into one allotment, called the Monida Hill Allotment #20023. The combining of these allotments would result in three pastures, Lower Reservoir, Middle and Monida Hill. Currently these adjoining allotments are licensed to the same operator.
- There would be no change in authorized active AUMs.
- The season of use would be changed from 6/1 to 10/31 to 6/1 to 9/1.

	Lower Reservoir 124 AUMs	Middle 283 AUMs	Monida 200 AUMs
Year 1	Rest	7/15 – 9/1 500 cattle up to 19 days	6/1 – 7/14 500 cattle up to 12 days
Year 2	6/1 – 7/14 500 cattle up to 21 days	Rest	7/15 – 9/1 500 cattle up to 12 days
Year 3	7/15 – 9/1 500 cattle up to 21 days	6/1 – 7/14 500 cattle up to 19 days	Rest

- The number of days used can be increased if the number cattle is reduced as long as AUMs or schedule season of use in any pasture is not exceeded on any given year. For example, if the operator decided to run 250 cattle in the Middle Pasture, the days of use could be increased to up to 36 days within the schedule season of use.

Projects

- The spring source in T.14 S., R.6 W., section 22 (Middle Pasture) would be fenced and water piped to a nearby water trough to exclude livestock impacts at the water source and provide a reliable off-site water source.

Price Creek #30040

Management

- Continue three pasture rest rotation with the use of sub-pastures to improve livestock management as outlined in current AMP. Livestock numbers, season of use and AUMs would remain the same. The management has been effective in improving overall resource conditions on the Price Creek Allotment. The changes proposed below are to address site specific concerns or logistical problems with the current management plan:
- Use Duck pond field every other fall rotation, if needed, for up to 15 days to meet vegetation objectives.
- Use 80 acre pasture north of the road between private parcels as a temporary gathering or holding pasture for one to two days during the spring and fall annually. When it is not being used as a holding pasture, the gate would be closed and livestock use excluded.
- Use East Fork field 5 to 7 days coming or going to the State field with up to 350 head. This would be a short duration deferred treatment for this pasture.
- The East Fork and West Fork of Corral Creek would not be excluded from livestock grazing. The use on the creeks would be as described above for riparian management.
- The target guidelines would continue on Price Creek as outlined in the existing management plan.

Projects (Listed in priority order)

- Construct Lima Reservoir water gap (1/4 mile) where E & W Reservoir fields meet.
- Develop two additional springs above Tree Frog spring if adequate water is available to provide more reliable water (600ft pipe) and storage tank. An

alternative to this would be to pipe water from a well on private land in section 24.

- Fence water troughs in the corner of Crescent and Lower Sand fields for use in multiple pastures.
- Construct fence to split Timber pasture (2 miles) N side section 4 & 5
- Construct fence to split Sand Creek pasture (1/2 mile) at Tree Frog Spring
- Construct Little Table Mountain drift fences (up to 1/2 mile) several on the north side of Little Table at approximately the State land boundary.
- Construct State Ridge let down fence (1/4 mile with two let down sections)
- Construct ¼ mile of fence and install a double gate in road fence on the west end of the 80 acre pasture.
- Construct fence (2 miles) to split the state field
- Rebuild centennial divide fence (1/2 mile) West end of Little Table Mountain
- Develop water in Timber pasture by installing 2 pipelines out of Price Creek (CE 72 and CE 64) with four water troughs located in sections 32, 33, 5, & 4.
- Move spring development in section 33 of Timber pasture approximately ¼ mile south.
- Develop two additional springs in section 29 in the Timber Pasture.
- Develop one additional spring in section 25 of the Sand Creek pasture.

Brundage Creek #20708

Management

- Continue the deferred rotation/alternating seasons grazing system. Season of use would be changed from 4/15 – 10/30 to 5/1 – 10/30. The existing AMP would remain in effect. The AMP generally allows for May or mid August -October use on an alternating basis. Mid summer (June/July and early August) is generally not feasible due to the large amount of larkspur that occurs on the allotment.
- Authorized use would remain at 912 active AUMs.

Projects

- The spring source and associated dams at T. 13 S., R. 3 W. section 27 E½, in the East pasture would be fenced and water piped to a water trough away from the stream reach to provide off-site water.
- The water gap located at T. 13 S., R. 3 W. section 27, S½, on the Red Rock River in the East pasture would be hardened with rock to reduce stream bank impacts at this watering location.

Centennial #20710

Vegetative Treatments (Special Status Plants)

- Up to 118 acres of sand dunes habitat within the proposed Centennial Sand Dunes ACEC could be treated with prescribed fire and prescribed livestock grazing as described in Section 2.3.3.

Lima Reservoir #10151

Management

- The deferred grazing system on the Lima Reservoir AMP would be continued and season of use would remain 7/1 – 11/30. The allotment was in relatively good condition except for site specific concerns on one riparian area and drought related concerns. Also, the current season of use eliminates any conflicts with waterfowl nesting periods.

- Authorized use would remain at 793 active AUMs.

	West Unit	East Unit
Annually	7/1 – 8/9 507 AUMs	8/10 – 11/30 286 AUMs

Projects

- Off site water would be developed on private or State land approximately ½ mile north of stream reach CE 141 (T.14 S., R. 5 W., section 2, NW¼) in the East Unit to mitigate livestock impacts on this stream reach.

Saier Individual # 20169

Management

- Allotment would be used on a four year rest rotation basis with the rest year coinciding with the adjacent USFS Elk Lake allotment and early, middle and late treatments opposite of the adjacent Elk Lake allotment so there would no conflict with watering needs.
- Season of use would be changed from 9/1 – 9/30 to 7/1 – 9/30.
- Authorized use would remain at 104 active AUMs.

	Saier Allotment
Year 1	Early (July)
Year 2	Middle (August)
Year 3	Late (September)
Year 4	Rest

Projects

- Pipe water onto the north portion of the Saier Allotment (T. 14 S., R.1.E, section 5 NW¼) from the existing pipeline in the adjacent USFS Elk Lake Allotment pending cooperation with the USFS and USFS permittees.

Sand Dunes # 20732

Management

- Allotment would be managed under a deferred grazing system. It would be grazed annually after seed ripe for up to 30 days between August 10 and October 15 for up to 107 AUMs.

Projects

- Fence the pond located on private land adjacent to the north end of allotment into the allotment to provide an adequate water source to facilitate livestock management. The pond is located at T. 13 S., R. 2 W., section 14 SW¼, SE¼.

Vegetative Treatments

- Up to 647 acres of sand dunes habitat within the proposed Centennial Sand Dunes ACEC could be treated with prescribed fire and prescribed livestock grazing as described in Section 2.3.3.

Brundage Bridge #20707

Management

- The eastern BLM tract in the Brundage Bridge Allotment (T. 13 S., R, 3 W., section 34 N½ and section 27 S½) would be fenced with either a 3 wire electric fence or a 3 wire barbed wire fence. This is the public land parcel in which the Red Rock River flows through. This unit would be called the Brundage Bridge Riparian Pasture.

	Brundage Bridge Riparian Pasture
Year 1	6/15 – 11/14 80 AUMs 160 Cattle for up to 15 days
Year 2	Rest

- Cattle numbers could be increased if numbers of days were reduced as long as authorized AUMs are not exceeded.
- There would be no change in the current authorization on the BLM custodial tracts in T. 13 S., R. 3 W. section 33 and T. 14 S., R. 3 W. section 4 (the portion east of the allotment boundary fence). These BLM parcels are fenced in with large tracts of private land and no resource concerns were noted. These custodial tracts would continue be licensed from 5/1 – 11/14 with 50 AUMs of active use.

Projects

- Construct approximately 1¾ miles of new fence (3 wire electric or 3 wire barbed) around the Riparian Pasture located at T. 13 S., R, 3 W., section 34 N½ and section 27 S½.

Morton Individual # 20163

Management

- Adjust allotment boundary to match proposed boundary change for Tom Creek

Ritchie #30610

Management

- The 160 acre tract of BLM administered land would be fenced (2 or 3 wire electric or 3 wire standard)
- Authorization would be for use every other year: 25 cattle for a 30 day grazing period between 6/15 and 11/30 for up to 25 active AUMs.
- Since there is no water on this tract, use would be authorized by opening the gates or letting down a portion of the fence for 30 days during the authorized season of use.

Projects

- Approximately 1½ miles of new fence (2 or 3 wire electric or 3 wire standard) along the BLM/private land boundary.

Tom Creek # 20701 and Cook Sheep Camp # 00767

Management

- The Cook Sheep Camp and Tom Creek Allotments would be combined into one allotment called Tom Creek #20701.
- Area of use would be changed on the map to reflect the public land area that is currently being grazed by livestock. There are no fences to contain livestock in the areas that are authorized on the map. This is an administrative change and does not expand or change the use on the ground. The 40 acre isolated BLM administered tract on the north side of the allotment (T.14 S., R. 1 E. section 20, NW¼, NW ¼) would be fenced out of the allotment and would no longer be available for livestock use.
- There would be no change in the current authorization of 4 cattle from 06/08 to 10/15 for 17 AUM's managed as a Custodial Allotment.
- The BLM recognizes that livestock have been trailing from private and BLM administered lands up to lands administered by the Agricultural Research Station Sheep Experiment Station and Targee National Forest without authorization. The BLM, along with personnel from Agricultural Research Station, have explored several options to mitigate this issue. However, short of fencing the entire WSA boundary between lands administered by the BLM and private land, there is not a solution. The cattle drift up to these areas along the benches and ridges and come down via the drainages, so gap fences in the drainages would only serve to fence livestock on the upper (wrong) side of the fence. The BLM will work with the livestock operator and encourage more riding to keep livestock on the private land and authorized use areas on BLM administered land.

Projects

- Construct ¾ mile of fence in Corral Creek on the east end of the allotment to control livestock movement onto the Morton Individual Allotment and private land.

2.3.5 Description of Alternative C

Forest Health Treatments

Alternative C would emphasize the re-introduction of fire to accomplish forest health objectives on land within the base acres available for timber harvest. Harvest treatments would be designed to enhance control lines for prescribed burning. The width of these treatment areas would vary from 2 to 10 tree heights depending upon slope, fuel loading and tree species. Treatment would consist of the harvest and removal of dead trees, and thinning from below of all species of live conifers. These treated areas would then expand existing control lines such as roads and natural openings and increase flexibility of prescribed burning prescriptions. The map of Alternative C – Forestry/Fuels Units in Appendix A shows treatment unit locations. In this alternative, there would be no commercial firewood or post and pole opportunities, and no treatments to address conifer encroachment. Compared to Alternative B, this alternative proposes less aspen restoration treatments, less wildland fire use buffer treatments, and opportunities for public utilization of forest products.

Table 7: Alternative C Description of Forestry/Fuels Units

Unit Name	Acres	Objective(s)*	Treatment Type(s)
PC1	411	↑ forest health ↑ aspen and whitebark pine regen.	Commercial harvest (136 acres) Prescribed fire
PC2	579	↑ forest health ↑ aspen regen.	Commercial harvest (233 acres) Prescribed fire
PC3	33	Public safety Public firewood availability	Commercial harvest
PC4	105	↑ forest health	Commercial harvest (38 acres) Prescribed fire
PC5	245	↑ whitebark pine regen.	Non-commercial mechanical Prescribed fire
PC6	644	↑ aspen regen.	Non-commercial mechanical Prescribed fire
LV1	3835	↑ forest health Create Wildland Fire Use buffer Protect Wildland Urban Interface	Non-commercial mechanical Prescribed fire
SD1	693	↑ rare plant habitat	Prescribed fire
SD2	364	↑ rare plant habitat	Prescribed fire
SD3	444	↑ rare plant habitat	Prescribed fire

* Abbreviations: ↑=increase ↓=decrease

The road and crossing requirements for the Price Creek drainage are shown on Table 8 below and on maps in Appendix A. The Price-Peet timber sale in the 1980s treated 64 acres per mile of road. Under Alternative C, conventional yarding would access 64 acres per mile of road, and helicopter yarding would access 87 acres per mile of road. No additional new temporary roads or crossings are required to access the other proposed units in this alternative.

Table 8: Alternative C Price Creek Roads and Crossings

Unit Name	Yarding Type	Existing Roads (miles)	New Temporary Roads (miles)	Stream Crossings West Fork Price Creek			Stream Crossings Main Fork Price Creek		
				Existing	Rebuilt	New	Existing	Rebuilt	New
PC1	Conventional	1.7	1.2	0	0	0	N/A		
	Helicopter	1.5	0.0	0	0	0	N/A		
PC2	Conventional	1.2	2.0	0	0	1	0	0	1
	Helicopter	1.0	1.4	0	0	1	0	0	1
PC3	Conventional	Will use existing Price-Peet Road. No new temporary roads or crossings will be constructed.							
	Helicopter								
PC4	Conventional	0.0	0.3	0	0	0	0	0	0
	Helicopter	0.6	0.2	0	0	0	1	0	0
TOTALS	**Conventional**	**2.9**	**3.5**	**0**	**0**	**1**	**0**	**0**	**1**
	Helicopter	**3.1**	**1.6**	**0**	**0**	**1**	**1**	**0**	1

Livestock Grazing Management

This alternative proposes the same changes in livestock management as Alternative B except for the Fish Creek, Monida Hill, Passmore SGC and Phalarope East allotments.

Forest health treatments are shown by allotment in Table 9. Acres shown include BLM administered lands only. The proposed projects are shown on individual Allotment Maps in Appendix A.

Fish Creek #20172

Management

- Season, number of livestock and authorized AUMs (572) would be the same as Alternative B. The grazing system would be an alternating rest and would include approximately 3 miles of fence to control livestock between the units. Trailing would be authorized across the rested pasture to facilitate pasture moves to and from the permittee's USFS allotment.

	West Unit (Fish Creek)	East Unit (Metzel Creek)
Year 1	450 Cattle 6/13 – 7/2 700 Cattle 7/3 – 7/16 700 Cattle 9/30 - 10/22	REST
Year 2	REST	450 Cattle 6/13 - 7/2 700 Cattle 7/3 – 7/16 700 Cattle 9/30 – 10/22

Projects

- Same as Alternative B but the fence proposed as an optional project under Alternative B would be a required project under this alternative. This would be construction of approximately 1 mile of new fence (3 wire) on BLM administered lands and approximately 2 miles of new fence on State lands. This fence would be located at T. 13 S., R. 3 W., section 2 E½ (BLM land) and sections 11 and 14 E½ (State Land).

Passmore #20193

Management

- Authorized use would remain at 16 active AUMs.
- Allotment would be grazed by livestock every other year with the following authorization:

	Passmore
Year 1	6/15 – 6/30 16 AUMs (32 Cattle)
Year 2	Rest

Projects

- Construct or reconstruct approximately ¾ mile of 4 wire standard type fence around the allotment to allow prescriptive management.

Phalorope East #20177 and Monida Hill #20023

Management

- The Monida Hill and Phalarope East allotments would be combined into one allotment and the AUMs and grazing system would be the same as in Alternative B. This alternative would include the construction of additional fencing to fence the BLM administered lands from the private lands.
- The season of use would be changed from 6/1 – 10/31 to 7/1 to 9/1.

	Lower Reservoir	Middle	Monida
Year 1	Rest	8/1 – 9/1 500 cattle, not to exceed 19 days within this grazing period	7/1 – 7/31 500 cattle, not to exceed 12 days within this grazing period
Year 2	7/1 – 7/31 500 cattle, not to exceed 9 days within this grazing period	Rest	8/1 – 9/1 500 cattle, up to 12 days
Year 3	8/1 – 9/1 500 cattle up to 9 days	7/1 – 7/31 500 cattle up to 19 days	Rest

- The number of days used could be increased if the number of cattle is reduced as long as the authorized AUMs in any pasture is not exceeded on any given year. For example, if the operator decided to run 400 cattle in the Middle Pasture, the days of use would be increased to up to 24 days.

Projects

- Same as Alternative B and additionally approximately 4 ¾ miles of standard 3 wire fence would be constructed as follows:
  - Approximately one mile of new fence on property boundaries between State Land in section 16 and BLM administered land in section 9, T. 14 S., R. 6 W.
  - Approximately one mile of new fence on property boundaries between private and BLM administered land in sections 17 and 8, T. 14 S., R. 6 W.
  - Approximately one mile of new fence on property boundaries between private and BLM land in sections 7 and 8, T. 14 S., R. 6 W.
  - Approximately 1 ¾ mile of new fence on property boundaries between private and BLM land in sections 6 and 5, T. 14 S., R. 6 W.

Centennial #20710, Sand Dunes #20732, and Oxbow #20735

Vegetative Treatments (Special Status Plants)

- Same as Alternative B

2.4 Summary Comparison of Alternative Actions

A summary comparison of Alternative actions by allotment for the 26 Allotments in which changes in livestock management, addition of range improvements or vegetative treatments are proposed is shown in Table 9. Table 10 compares the amount of vegetative treatment by alternative.

A detailed discussion of impacts for each alternative and issue can be found in Chapter 4.

Table 9: Summary Comparison of Alternative Actions by Allotment

Allotment	Terms & Conditions	Alternative A	Alternative B	Alternative C
Antelope Peak	Season of Use	5/1 – 10/31	6/1 – 10/31	Same as Alternative B
	Active AUMS	Up to 567	Up to 567	

Allotment	Terms & Conditions	Alternative A	Alternative B	Alternative C
#20179 (I) (Standards were met)	**Grazing System and Allowable Use Levels.**	Deferred rotation No use levels	Improved Deferred Rotation; 50% upland utilization.	
Fish Creek #20172 (I)	**Season of Use**	6/5 – 10/27	6/13 – 10/22	6/13 – 10/22
	Active AUMs	Up to 572	Up to 572	Up to 572
	Grazing System and Allowable Use Levels.	Deferred Rotation - spring/fall with approximately 35 cattle left through the summer.	Deferred Rotation – alternating spring (6/13 – 7/16); fall (9/30 – 10/22) only. 50% upland; 4" sedge stubble height; up to 50% annual browse leader growth	Two pasture Rest Rotation. Pasture used spring & fall year 1 (same dates as alternative B) and complete rest year 2. Allowable use levels same as Alternative B.
	Projects	No new projects	A spring development and water trough. A hardened crossing on Fish Creek. An optional project is 3 miles of fence.	Same as Alternative B, but 3 miles of fence is required, not optional.
	Vegetative Treatments (to address Forest Health Issues)	No vegetative treatments	Up to 194 acres of commercial harvest followed by prescribed fire.	No vegetative treatments
Long Creek AMP #20154 (I) (Forest Health Issues Only, Livestock mgt. revised in 2003.)	**Vegetative Treatments**	No vegetative treatments	Up to 56 acres of commercial harvest followed by prescribed fire.	No vegetative treatments
Monida Hill #20023 (I) (includes Phalarope East Allotment in Alts B & C)	**Season of Use**	5/20 – 7/10 Monida 6/1 – 10/31 Phalarope	6/1 – 9/1	7/1 – 9/1
	Active AUMs	200 Monida 407 Phalarope	Up to 607	Up to 607
	Grazing System and Allowable Use Levels.	Alt. Spring - Monida Season Long - Phalarope No use levels	Three pasture rest rotation (spring, fall, rest). 50% upland, 4" sedge stubble height, 50% annual browse leader growth.	Three pasture rest rotation excluding private land. Allowable use levels same as Alternative B.
	Projects	No new projects	A spring development and water trough in Mid. Pasture	Same as Alternative B and additionally 4¾ miles of 3 strand fence.
Oxbow #20735 (I) (includes Windmill Allotment #20733 in Alt. B) (Standards were met on both allotments)	**Season of Use**	5/1–11/14 Oxbow 5/15–11/14 Windmill	5/15 – 11/16	Same as Alternative B
	Active AUMs	871 Oxbow 79 Windmill	Up to 948	
	Grazing System and Allowable Use Levels.	Rapid Rotation -Oxbow Season long – Windmill No allowable use levels	Improved Rapid Rotation system with more units and less time per unit. 50% upland, 4" sedge stubble height, 50% annual browse leader growth.	

Allotment	Terms & Conditions	Alternative A	Alternative B	Alternative C
	Projects	No new projects	Up to 2 miles of 3 strand barbed wire fence. Up to 6 off-site water troughs. Temporary electric fences as needed	
	Vegetative Treatments (Windmill Unit only)	No vegetative treatments	Up to 181acres of prescribed fire and/or prescribed livestock grazing could be used within the proposed Centennial Sand Dunes ACEC to create early seral habitat for special status plants.	Same as Alternative B.
Passmore SGC #20183 (I)	**Season of Use**	8/1 – 9/30	9/1 – 9/15	6/15 – 6/30
	Active AUMs	16	Up to 16	Up to 16
	Grazing System and Allowable Use Levels.	Deferred Rotation; No allowable use levels	Rest Rotation Alternating Rest 50% upland, 4” sedge stubble height	Rest Rotation Alternating Rest 50% upland, 4” sedge stubble height
	Projects	No new projects	¾ miles of 4 wire barbed fence	Same as Alternative B.
Peet Creek #10730 (I) (Forest Health, Fuels & Conifer Expansion Issues Only, Livestock mgt. was addressed in 2001.)	**Vegetative Treatments**	Up to 7 acres of commercial harvest to remove hazard trees along Price-Peet Road.	Up to 150 acres of commercial harvest followed by prescribed fire. Up to 239 acres of prescribed fire only*.	Up to 22 acres of commercial harvest followed by prescribed fire. Up to 8 acres of prescribed fire only*.
Price Creek #30040 (I) (Standards related to livestock mgt. were met)	**Season of Use**	6/15 – 10/15	6/15 – 10/15	Same as Alternative B
	Active AUMs	1874	Up to 1874	
	Grazing System and Allowable Use Levels.	Three Pasture Rest Rotation with sub-units (spring, fall, rest). Allowable use levels defined in current AMP (more stringent guidelines are defined for WCT streams).	Same as A, but with additional sub-units to shorten time in some units and additional watering sites to further reduce use in riparian areas. Allowable use levels same as Alt A.	
	Projects	No new projects	Construct or re-construct up to 6 miles of fence; 5 new spring developments with 3 water troughs, move 1 spring development; 2 pipelines with 4 water troughs.	Same as Alternative B

Allotment	Terms & Conditions	Alternative A	Alternative B	Alternative C
	Vegetation Treatments (to address Forest Health or Conifer Expansion Issues)	Up to 197 acres of commercial harvest to remove hazard trees along Price-Peet Road.	Up to 1,032 acres of commercial harvest followed by prescribed fire. Up to 1,169 acres of prescribed fire only*. Up to 33 acres commercial firewood permits. Up to 10 acres post/pole permits.	Up to 381 acres of commercial harvest followed by prescribed fire. Up to 33 acres of commercial harvest only. Up to 1,507 acres of prescribed fire only*.
Shambo Units #20152 (I) (Forest Health, Fuels & Conifer Expansion Issues Only; Livestock mgt. was revised in 1998)	**Vegetative Treatments**	No vegetative treatments	Up to 65 acres of commercial harvest followed by prescribed fire. Up to 90 acres of commercial harvest only. Up to 1,094 acres of prescribed fire only*.	No vegetative treatment.
Brundage Creek #20708 (M)	**Season of Use**	4/15 – 10/30	5/1 – 10/30	Same as Alternative B
	Active AUMs	912	Up to 912	
	Grazing System and Allowable Use Levels.	Deferred Rotation – alternating May use & mid August – Oct use. No allowable use levels	Same as Alt. A, but with exclosure and off site water to reduce impacts to riparian reach. 50% upland, 4" sedge stubble height	
	Projects	No new projects	Harden the existing livestock water gap on the Red Rock River. Develop 1 spring, fence spring source, and install up to ¾ mile of pipeline and water trough.	Same as Alternative B.
Centennial #20710 (M) (Vegetative treatments only; Standards were met)	**Vegetative Treatments**	No vegetative treatments	Up to 118 acres of prescribed fire and/or prescribed livestock grazing could be used within the proposed Centennial Sand Dunes ACEC to create early seral habitat for special status plants.	Same as Alternative B.
Duff Creek AMP #20688 (M) (Forest Health and Fuels Issues Only)	**Vegetative Treatments**	No vegetative treatments	Up to 1,298 acres of prescribed fire only*.	Up to 1,298 acres of prescribed fire only*.
Lima Reservoir #10151 (M) (Standards were met)	**Season of Use**	7/1 – 11/30	7/1 – 11/30	Same as Alternative B
	Active AUMs	793	Up to 793	
	Grazing System and Allowable Use Levels.	Deferred Use No allowable use levels	Deferred use. 50% upland, 4" sedge stubble height, 50% annual browse leader growth.	
	Projects	No new projects	Install one water trough (private or State land)	Same as Alternative B

Allotment	Terms & Conditions	Alternative A	Alternative B	Alternative C
Mud Lake Field #30260 (M) (includes Munday Res & Munday East Allotment in Alt B) (Standards were met on Mud Lake and Munday East)	**Season of Use**	5/15–11/15 Mud L. 5/1–10/31 Munday R. 5/1-10/31 Munday E.	6/1 – 10/31	Same as Alternative B
	Active AUMs	36 Mud Lake 79 Munday Res. 48 Munday East	Up to 166	
	Grazing System and Allowable Use Levels.	Season Long (for all three allotments) No allowable use levels	Four pasture Deferred Rotation. 50% upland, 4" sedge stubble height, 50% annual browse leader growth.	
Saier Individual #20169 (M) (Standards were met)	**Season of Use**	9/1 – 9/30	7/1 – 9/30	Same Alternative B.
	Active AUMs	104	Up to 104	
	Grazing System and Allowable Use Levels.	Deferred Use No allowable use levels	Four year Rest Rotation 50% upland utilization.	
	Projects	No new projects	Up to 1 miles of pipeline from existing USFS pipeline to new water trough.	
Sand Dunes #20732 (M) (Standards were met)	**Season of Use**	6/1 – 7/15	8/10 – 10-15 (Up to 30 days use within use period)	Same as Alternative B
	Active AUMs	107	107	
	Grazing System and Allowable Use Levels.	Spring No allowable use levels	Deferred system. Used annually after seed ripe. 50% upland use, unless prescribed differently to meet objectives for special status plants.	
	Projects	No new projects	Fence private land pond into allotment (up to 1 mile of fence)	
	Vegetative Treatments	No vegetative treatments	Up to 647 acres of prescribed fire and/or prescribed livestock grazing could be used within the proposed Centennial Sand Dunes ACEC to create early seral habitat for special status plants.	Same as Alternative B
Brundage Bridge #20707 (C)	**Season of Use**	5/1 – 11/14	Up to 15 days of use between 6/15 – 11/14 in Riparian pasture. 5/1 – 11/14 in Custodial pasture.	Same as Alternative B.
	Active AUMs	130	Up to 80 AUMs in Riparian Pasture. 50 AUMs in Custodial pasture.	
	Grazing System and Allowable Use Levels.	Season long. No allowable use levels.	Riparian Pasture: Rest rotation alternating rest and use. Custodial Pasture: season long. 50% upland, 4" sedge stubble height, 50% annual browse leader growth.	

Allotment	Terms & Conditions	Alternative A	Alternative B	Alternative C
	Projects	No new projects.	Approximately 1¾ miles of fence to create riparian past.	
Davis Common SGC #10737 (C) (Forest Health and Fuels Issues Only)	**Vegetative Treatments**	No vegetative treatments	Up to 55 acres of prescribed fire only*.	No vegetative treatments.
Morton Individual SGC #20163 (C) (Standards were met)	**Season of Use**	5/15 – 11/14	5/15 – 11/14	Same as Alternative B
	Active AUMs	12	Up to 12.	
	Grazing System and Allowable Use Levels.	Season long. No use levels.	Season long. 50% upland, 4” sedge stubble height, 50% annual browse leader growth.	
	Projects	No new projects.	Approximately ¾ mile of fence. (Same fence shown for Tom Creek)	
	Vegetative Treatments	No vegetative treatments	Up to 396 acres of prescribed fire only*.	No vegetative treatments.
Ritchie SGC #30610 (C)	**Season of Use**	5/1 – 11/30	Up to 30 days between 6/15 – 11/30	Same as Alternative B.
	Active AUMs	25	Up to 25	
	Grazing System and Allowable Use Levels.	Season long	Rest Rotation (alternating rest and use)	
	Projects	No new projects.	1½ miles of fence.	
Tom Creek #20701 (C) (includes Cook Sheep Camp in Alt B.) (Standards related to livestock mgt. were met)	**Season of Use**	5/16 – 10/20	5/16 – 10/20	Same as Alternative B.
	Active AUMs	10	Up to 10	
	Grazing System and Allowable Use Levels.	Season long. No allowable use levels	Season long. 50% upland, 4” sedge stubble height, 50% annual browse leader growth.	
	Projects	No new projects	Approximately ¾ mile of fence.	

Abbreviations: I-Improve, M-Maintain, C-Custodial

*Non-commercial mechanical treatment may also be used to facilitate prescribed burning where necessary outside of the Centennial Mountains WSA.

Table 10: Summary Comparison of Proposed Vegetation Treatments by Alternative

Treatment	Alternative A	Alternative B	Alternative C
Prescribed Fire Only* (acres)	0	8810	6913
Commercial Harvest Only (acres)	204	90	33
Commercial Harvest followed by Prescribed Fire (acres)	0	1607	407
Commercial Firewood Permits (acres)	0	33	0
Post and Pole Permits (acres)	0	10	0

	Alternative A	Alternative B	Alternative C
Total Acres Treated	204	10550	7353
% of BLM within Watershed Boundary Treated	0.2%	10.2%	3.0%
% of BLM Forested Acres Treated	0.4%	15.6%	9.0%
% of BLM Forest Base Acres Commercially Treated	2.5%	24.1%	6.4%

*Non-commercial mechanical treatment may also be used to facilitate prescribed burning where necessary outside of the Centennial Mountains WSA.

3.0 Affected Environment

This chapter describes the existing condition of specific environmental components that may be affected by the proposed action. The description of the affected environment is related to the specific issues identified in Chapter 1, but also encompasses the wider landscape of the entire Centennial Watershed. Additional information on the Affected Environment within the Centennial Watershed can also be found in the Centennial Watershed Assessment Report which is incorporated into this document by reference and is on file at the Dillon Field Office.

3.1 General Setting

Elevations within the assessment area range from 6,520' along the Red Rock River on the west end to over 10,203' on Mount Jefferson on the east end of the valley. Topography varies from flat valley bottoms to steep mountainous ravines. Vegetation varies from wetland vegetation such as sedges and rushes to three-tip sagebrush and bluebunch wheatgrass or black greasewood and inland salt grass in the valley bottom to lodgepole pine, subalpine fir and/or whitebark pine forests along the continental divide. Annual precipitation within the watershed varies from <10" in the lower elevations to >30" in the higher country. The diverse landscape and vegetation within the watershed assessment area provides habitat for an abundance of wildlife.

Within the watershed, the array and landscape pattern of plant communities and their ecological status (seral stage), is primarily a function of climate, geology, and soils. Short term weather patterns and disturbance regimes (fire and herbivory) affect the pattern of plant communities and seral stages to a lesser extent.

Current vegetative cover was calculated using satellite imagery and is summarized in the following table.

Table 11: Vegetative Cover in the Centennial Watershed

Description	All Ownerships (acres)	% of Total	BLM Land (acres)	%BLM	% of BLM Total
Agriculture	3,761	1.05	84	2.24	0.10
Grassland	102,896	28.73	15,734	15.29	18.93
Willow / Mesic Shrub	13,974	3.90	1,059	7.58	1.27
Sagebrush	131,395	36.69	33,879	25.78	40.77
Aspen	32,978	9.21	3,596	10.90	4.33
Lodgepole / Douglas Fir	10,288	2.87	3,657	35.55	4.40
Douglas Fir	40,633	11.35	19,456	47.88	23.41
Whitebark Pine	814	0.23	395	48.47	0.47
Subalpine	6,872	1.92	4,061	59.10	4.89
Rock/Water/Snow	14,487	4.05	1,181	8.15	1.42
Totals	**358,098**	**100.00**	**83,102**	**23.21**	**100.00**

% of Total = Percent of acreage for each land type for all land
% BLM = Percent of acreage for each land type that BLM manages
% of BLM Total = percentage of acreage for each land type for all BLM land

Table 3 in Chapter 2 lists the 41 allotments that are included in this EA and shows the active AUMs, acres, and the grazing system that has been in place since the Mountain Foothills EIS was completed.

3.2 Description of Affected Resources/Issues

3.2.1 Issue #1: Forest and Woodland Health

Forested habitats comprise approximately 25% of the entire watershed, most of which lies along the south side of the valley in the Centennial Mountains. The close association of much of this forested habitat with adjoining sagebrush and riparian habitats supports a broad array of wildlife species. This habitat provides essential linkage corridors for grizzly bears, Canada lynx, gray wolf and other large carnivores. It also provides security habitat for big game species and migration corridors between seasonal habitats.

Woodlands at the lowest elevations are composed of limber pine, Douglas-fir and some juniper intermixed in sagebrush. The tree line varies from 6,700' to 7,000' in elevation. Limber pine is rapidly declining due to drought and white pine blister rust. Estimated mortality ranges from 40% to more than 80% in some drainages. Conifer encroachment into sagebrush/grasslands is common in the lower to mid elevations. Comparing aerial photography from 1942 and 2001 of the Price Creek area shows an estimated 200 or more acres of sagebrush/grassland habitat that has been affected by conifer expansion on BLM lands in the immediate vicinity. This is likely an underestimate, because photography is not able to discern the beginning stages of this process where seedling or sapling size trees have become established in sagebrush/grassland areas. The Price Creek area is a representative example of ongoing conifer encroachment throughout the Centennial valley.

Aspen composes about 9 % of the forest across all ownerships in the valley of which 11% is on lands administered by the BLM. Research indicates that greater than 70% of the area historically occupied by aspen has been lost in mid to lower elevation forests of the eastern Centennial Mountains, much of which is attributed to conifer encroachment and eventual species conversion (Gallant et al 2003).

Aspen clones that are intermixed with mature conifer stands are rapidly declining or in many instances they appear to be dead. Based upon a comparison of 1942 and 2001 aerial photography of the Price Creek area, it is estimated that approximately 590 acres of aspen have either substantially declined or have been completely overtaken by conifers on BLM lands. This 1942 photography is not able to discern smaller aspen clones that formerly were alive in conifer stands. Determining the acreage of these smaller aspen clones is very difficult, however the evidence of their existence is readily apparent by the scattered declining trees or the dead aspen remains on the ground in these stands.

The only area in the watershed where aspen patches exhibited a variety of age class distribution was in the upper elevations of along the east side of the Fish Creek Allotment (east of Metzel Creek) on the north side of the valley. This may be due to what appears to be more active soil movement in that area. Aspen habitat provides forage for large ungulates, foraging and denning habitat for lynx, and nesting habitat for migratory song birds.

Douglas-fir is the dominant species above the woodlands and some of the larger aspen patches. A recent study of the Douglas-fir forest in the vicinity of Baldy Mountain quantified that stocking rates of Douglas-fir have more than tripled since the 1860's, and areas that were historically aspen or forested meadows had filled in with Douglas-fir (Korb 2005). There is no evidence of fire scarring in this younger cohort of Douglas-fir that has formed a more continuous forest canopy. The Winslow Creek fire of 2003 showed that under summer burning conditions, this structure resulted in larger, more dominant and less internally heterogeneous patches of high severity burn from wildland fire than under historic conditions. The typical ages of older Douglas-fir in the area is 250 or more years old with the many of these exhibiting evidence of one or more low intensity ground fires. This demonstrates that historic fires tended to be more frequent and of lower intensity than recent wildfires. These fires maintained the Douglas-fir savannah structure: open stand structure with large, fire-tolerant trees.

Larger diameter Douglas-fir trees are showing increased mortality due to the Douglas-fir bark beetle. The Douglas-fir bark beetle was at endemic levels for over 20 years, but has reached epidemic levels within the last 5 years and is spreading westward in the valley. It is now killing an estimated 30% or more of the larger Douglas-fir trees in the eastern ½ of the valley. This insect is having a direct negative effect on retention of large diameter Douglas-fir which was a major stand component for over 200 years. Also, western spruce budworm has been at epidemic levels for more than 5 years. Douglas-fir is one of its primary food sources. When combined with drought, it has caused a significant negative effect on all size classes. It is a major contributor to intermediate and suppressed size class mortality. In turn, this enhances the fuel loading of dead or dying foliage in the tree canopy.

Lodgepole pine is intermixed with Douglas-fir in the mid elevation ranges. Above 7,500' it begins to dominate and continues up to the 7,800'- 8,000' level. Typical ages of the lodgepole pine component of these stands range from 100 to over 175 years old. There is limited evidence of fire activity in these stands. This reflects the fact that the majority of these stands would have been somewhat resistant to the low intensity fires of the 1800's. Epidemic mountain pine beetle has resulted in a high degree of lodgepole pine mortality. Over the past 5 to 6 years, mountain pine beetle has killed an estimated 40-60% of the larger diameter lodgepole pine throughout the southern Centennial Mountains. Evaluation of inventory plot data acquired in 2003 indicated approximately 35% of lodgepole pine trees are dead or dying from mountain pine beetle. Many of these stands within the forest base acreage that have dead or dying lodgepole pine are in Price-Peet drainage. There is some Douglas-fir bark beetle in the area but as of 2004 its activity is limited in the Price Creek drainage. Douglas-fir bark beetle is active in Peet Creek to the east of Price Creek, and there is a high probability of it becoming active in Price Creek.

The pine engraver beetle (*Ips spp.)* may be present in the area. Commandra blister rust is common in lodgepole pine. It is unknown if it is playing a substantial role in lodgepole pine mortality. Dwarf mistletoe is also common in some areas. Generally, younger stands have less mistletoe than older stands. Englemann spruce is intermixed in both the lodgepole pine and Douglas-fir forest in the cooler or cold air pockets and drainages. Generally, the mid to upper reaches of the lodgepole pine forests has a subalpine fir component either regenerating in the understory or co-dominant in areas that have not had any disturbance in more than 150 to 200 years.

Western balsam bark beetle is killing subalpine fir in patches throughout the south side of the valley. This has been occurring over the past 5 to 7 years and has affected an estimated 60-80% of the larger diameter subalpine fir. Some localized occurrences of root rot may be present in the mid elevation zones but are not known to be a significant disease agent at this time.

Higher elevation lodgepole/spruce/subalpine fir forest provides summer habitat for mule deer and elk, and yearlong habitat for moose and large carnivores. Most wildlife species utilizing this habitat are seasonally migratory or have adapted to cope with significant winter snowfall

The highest forested areas have a whitebark pine component intermixed with subalpine fir, Englemann spruce and Douglas-fir. As with the limber pine, white pine blister rust is causing major mortality on whitebark pine throughout the watershed. In some drainages, estimated whitebark pine mortality is reaching 90%.

The only conifer species present not currently being affected by insects or disease is juniper. In many areas, it is slowly moving into the niches opened up by associated species mortality.

On the north side of the valley, Douglas-fir, lodgepole pine and aspen are present in scattered patches. Due to their relative infrequency, the timbered stands are "islands" of important wildlife habitat. The occurrence of white pine blister rust and mountain pine beetle is more limited, Douglas-fir bark beetle is present at endemic levels, and spruce budworm is approaching epidemic levels. Aspen is declining, but not to the extent of the south side of the Centennial Valley. Historically, continuous fine fuels and frequent fire maintained the Douglas-fir savannah structure. Fire exclusion has resulted in a structure shift to dense even-age conifers surrounding these old, large diameter trees.

Fire Regime Condition Class (FRCC) assessments were conducted by the ID team during field reviews finished in 2004. This process estimates the degree of departure from natural fire regime. The Centennials were categorized as one of three classes: These are based on low (Condition Class 1), moderate (Condition Class 2), and high (Condition Class 3) departure from the natural (historical) regime (Hann and Bunnell 2001, Hardy et al. 2001, Schmidt et al. 2001). Criteria used to determine current condition include the number of missed fire return intervals with respect to the historic fire return interval, and the current structure and composition of the system resulting from alterations to the disturbance regime. Low departure is considered to be within the natural (historical) range of variability, while moderate and high departures are outside.

The relative risk of fire-caused losses of key ecosystem components increases as condition class designation increases.

Based on the coarse-scale FRCC analysis, site-specific FRCC assessments, and historic photos of the area, the forested portions of the Centennial Watershed have moderate to severe departure from natural (historic) conditions. The moderate to severe departures are predominantly in the lower to mid elevations with the upper elevation stands generally being in low departure.

3.2.2 Issue #2: Riparian, Wetland and Aquatic Habitat and Associated Species

Red Rock River, Lima Reservoir and Red Rock Lakes are dominant surface water features in Centennial Valley. The Dillon Riparian Database and National Wetland Inventory (NWI) digital data layers were used to identify wetlands. The BLM is responsible for managing 2,954 acres and 140 miles of wetlands in the Centennial Valley.

The Lima Dam was originally constructed in 1875 and was reconstructed in 1934. This resulted in the creation of the Lima Reservoir, flooding a portion of the Red Rock River and its historic floodplain. The operation of the dam results in an unstable environment for the establishment of shoreline wetlands. The Centennial Valley, as well as the rest of southwest Montana, incurred a severe drought from 1998 through 2004. The water table dropped and the impact to wetland hydrology is evidenced by decreased vigor of wetland plants and drying up of wetlands.

Riparian and wetland habitats comprise <5% of the analysis area. This habitat extends from the Red Rock River in the valley bottom (6500') to higher elevation forested habitat (8500'). The stream habitats are generally dominated by willows or aspen communities along the foothills, and often represent stringers of habitat extending below forested areas into sagebrush/grassland habitat that is dominated by sedges and rushes. Aspen communities are scattered along the timbered front on the south side of the valley, many of them being associated with streams and springs. Riparian vegetation communities found in Montana are described in Hansen, et al. (1995) and Cooper, et al. (1995). Riparian and wetland communities around springs, seeps and pothole ponds in sagebrush habitats represent important small islands of habitat diversity as well as crucial water sources.

The Centennial Watershed is unique in that it is the largest wetland complex on public lands managed by the BLM in the Dillon Field Office. All species of ducks are well represented during spring and fall migrations with numbers reaching upwards of 50,000. The wetlands in the valley support ⅓ to ½ of the breeding population of trumpeter swans in the tri state area of Idaho, Montana and Wyoming. The Red Rock River and associated wetlands also support one of the largest populations of molting Canada geese in the northern Rocky Mountains.

The Red Rock Waterfowl Habitat Management Plan was developed in 1983 to facilitate effective waterfowl management in the Centennial Valley. The Wildlife Habitat Area analyzed in this plan stretches for 23 miles along the Red Rock River from the western boundary of Red Rock Wildlife Refuge westward to the impoundment at Lima Reservoir and encompasses approximately 53,000 acres of mixed ownership of which about 24,000 acres are public lands. This total includes the surface area of Lima Reservoir at normal pool (approximately 5,500 ac). The river is a sinuous system with abundant isolated oxbow channels. The vegetation is typically sedge, rush and bulrush wetland type with very limited riparian woody species along the floodplain which varies from 100 to 200 feet wide.

Riparian habitats receive a disproportionate amount of wildlife use with approximately 75% of all wildlife species in this area utilizing riparian habitat for at least some portion of their annual life cycle. These riparian areas provide essential habitat for moose, elk, beaver, sage grouse brood rearing and neo-tropical migrant songbirds

Beaver activity is evident by active and relic dams in most of the perennial streams in the watershed where suitable habitat exists. These habitats are essential to sustain migrant songbirds and amphibian populations.

Moose currently occur at least seasonally and in small numbers in all drainages throughout the watershed where dense riparian vegetation is present. Most moose habitat is associated with riparian corridors that extend from the major drainages upward in elevation into conifer forests. At higher elevations in moist forest types, moose use expands out of riparian areas and can occur yearlong and area-wide.

The Partners in Flight Bird Conservation Plan for Montana was prepared "to focus on restoring healthy ecosystems that will sustain productive and complete bird communities" (Montana Partners in Flight, 2000), and identified 141 species for priority status in five habitat groups. Most of these birds are summer residents that use habitats ranging from lower elevation wetlands to high elevation forests for breeding and raising young. Some species are migratory but small populations may be present yearlong depending on seasonal conditions. The USFWS has also identified a list of 28 "Birds of Conservation Concern" for the Rocky Mountain Region, 12 of which occur within the analysis area during part or all of the year.

There are 16 streams that support cold water fish within the assessment area. Westslope cutthroat trout (WCT), arctic grayling, mountain whitefish, mottled sculpin, longnose sucker, white sucker, long nose dace and burbot are endemic fishes in the Centennial Watershed. Rainbow trout, brown trout, brook trout and Yellowstone cutthroat trout were introduced, probably about the turn of the century to several streams and the Red Rock Lakes. Fish streams within the assessment area, for the most part, do not support popular recreation fishing. The Red Rock River below Lima dam supports a moderate sport fishery for hybrid cutthroat, rainbow trout and an occasional brown trout during years when it is not closed due to high water temperatures and low water flow. Hell Roaring and Odell creeks support a limited fishery for trout, mostly brook trout. Wolverine Creek is locally popular with some anglers pursuing relatively abundant brook trout.

All native species are present within the watershed at varying levels, with the exception of fluvial arctic grayling which have been extirpated from the Red Rock River. Adfluvial arctic grayling are still present within the watershed, but are not known to occur on BLM-administered lands. WCT are currently found in nine streams within the watershed. Bear Creek still supports 100% pure WCT. Additionally, there are three streams that support slightly hybridized WCT populations and five streams that support WCT with unknown genetic purity.

WCT were historically widespread throughout streams in western Montana. Genetically pure WCT are primarily restricted to limited habitats within headwaters of tributary streams where they occur in the Missouri River basin. It is estimated that westslope cutthroat trout are genetically unaltered in only 2.5% (McIntyre and Reiman 1995) to 10% (Shepard et al. 2002) of their historical range. Many of these small populations have a high risk of extinction due to isolation and threats from hybridization. WCT is categorized as a BLM special status species.

Price Creek, Bean Creek, Tom Creek and Hell Roaring Creek are WCT streams within the assessment area that could be affected by proposed alternatives. Price Creek currently supports a WCT population with genetic purity of 97%. Bean Creek currently supports a WCT population with genetic purity of 98%. Tom Creek and Hell Roaring Creek are currently listed as genetically untested.

Streams within the boundaries of the Centennial Watershed were assessed during the 2004 field season. An allotment may be found not meeting the riparian Standard even though some reaches within the allotment are in PFC or FAR with an upward trend or may be found to be meeting the riparian Standard even though some reaches are FAR with a static trend. Assessments of riparian health and stream function are done on an allotment basis, since management changes are generally implemented on an allotment basis. The process to assess these streams and wetlands is outlined in the Centennial Watershed Assessment Report. Table 12 provides a list of the allotments, the streams and wetlands, miles and/or acres of riparian habitat and condition/function of the riparian and wetland habitat.

Table 12: Allotments, Streams and Wetlands, Condition

Allotment Name and #	Streams and Wetlands	Miles/Acres PFC/FAR(upward trend)	Miles/Acres NF/FAR(static, down, not apparent)
Bean Creek #10125	Bean Pond	5 acres	
Brundage Bridge #20707	Red Rock River Stibal Pond		5 acres, 1.1miles
Brundage Creek #20708	Red Rock tribs		3 acres

Allotment Name and #	Streams and Wetlands	Miles/Acres PFC/FAR(upward trend)	Miles/Acres NF/FAR(static, down, not apparent)
Cocanougher Ind. #10738	Cocanougher Draw	0.5 miles	
Curlew #20199	Lima tribs, Lima Reservoir	16 acres, 0.8 miles	12 acres[1]
Davis SGC #10737	Hellroaring	4 miles	
Duff Creek #20688	7 reaches – Curry, Duff, Humphrey, Matsingale, Shambow	10 miles	
East Clover #30651	Clover trib.	0.6 miles	
Fish Creek #20172	Fish Creek Metzel Creek	1.8 miles	2.6 miles
Jones SGC #20731	Bean Slough	5 acres	
Lima Reservoir #10151	Clover, Shineberger, Wolverine, Lima Reservoir shoreline and tribs	2.9 miles	266 acres[1], 0.6 miles
Mata-Stib SGC #10696	Red Rock trib.	0.4 miles	
Monida Hill #20032	Huntsman, Monida, Lima Reservoir shoreline and tribs	3.8 miles	73 acres[1]
Morton Ind. SGC #20163	Corral Creek	3.9 miles	
Mud Lake Field #30260	Mud Lake	30 acres	
Munday Reservoir #20176	Lim trib, Lima Reservoir	0.5 miles	
Oxbow #20735	Mud trib, Peet Creek, Red Rock River, Bean Reservoir	9.8 miles, 1 acre	
Passmore SGC #20183	Jones Creek, Doras Pond	5 acres	0.5 miles
Phalarope East #20177	Lima Reservoir tribs and shoreline		7.9 miles, 89 acres[1]
Price Creek #30040[2]	Corral Creek, Peet Creek, Price Creek, Ritchie Pond, Sand Creek, Lima Reservoir shoreline, Mud Lake	39.1 miles, 200 acres	36 acres[1]
Red Rock #30636	Red Rock River	1 mile	
Ritchie SGC #30610	Stibal Ritchie	30 acres	

Allotment Name and #	Streams and Wetlands	Miles/Acres PFC/FAR(upward trend)	Miles/Acres NF/FAR(static, down, not apparent)
Rody Ind. #20685	Lima Reservoir		10 acres[1]
Shineberger #20159	Shineberger Creek	0.8 miles	
Tom Creek #20701	Tom Creek	2.3 miles	
7L SGC #20153	Blake Pond Blake Slough	1.1 miles	
Unalloted	East Corral, Monida, Odell, Price, Red Rock River, Shambow	6 miles	1.1 miles

[1] Lima Reservoir Shoreline Reach (determined to be FAR static, outside the control of the Authorized Officer)

[2] Drought related impacts.

Resource concerns observed by the ID team included some or all of the following: alteration of stream morphology (channel shape and gradient), composition, cover, structure and vigor of streamside vegetation, excessive sediment and/or conifer expansion. The ID team identified two primary causes of riparian/wetland resource concerns in the assessment area over which the BLM has no control. These causes are irrigation diversions and operation of Lima Dam (extreme fluctuations of water levels). The long term drought is also negatively impacting riparian and wetland resources throughout the watershed. The drought has had visible impacts (drying) on the streams and wetlands, primarily in the valley bottom. Table 13 lists the allotments within the watershed where most riparian and wetland areas within the allotment rated FAR with a downward, static or not apparent trend and generally describes the resource concerns.

Table 13. Resource Concerns in Riparian and Wetland Areas

Allotment	Hydrology: Channel Form and Process	Vegetation: Composition, Cover, Vigor	Erosion/Deposition: Sediment Transport, Upland Erosion
Brundage Bridge CE 130	Reduced Bank Stability	Insufficient sedge cover, altered composition	Increased sediment, impaired sediment transport
Brundage Creek CE 146,CE 147	Altered width/depth ratio	Altered composition	Increased sediment due to reduced bank stability, impaired sediment transport
Fish Creek (Metzel Cr. & lower reach of Fish Creek) CE 159, CE 14	Altered width/depth ratio	Decadence of willows; Altered Composition	Increased sediment due to reduced bank stability, impaired sediment transport
Passmore CE 109	Altered width/depth ratio	No concerns noted	Increased sediment due to unstable banks, impaired sediment transport

Allotment	Hydrology: Channel Form and Process	Vegetation: Composition, Cover, Vigor	Erosion/Deposition: Sediment Transport, Upland Erosion
Phalarope East BT 121-BT 129 BT 217	Excess hummocking (pugging) causing drying of wetland area	Altered composition	Increased sediment in stream reaches due to unstable banks.

In 2003, the Winslow Fire burned a substantial portion of the Winslow Creek drainage. The shift in cover from forested with duff on the forest floor to bare soil meant the soil surface was no longer protected from the impact of rainfall. This loss of protection also meant that rainfall absorbed by the forest and released through evapotranspiration was now converted to runoff. During the summer and fall of 2004 there were several rainfall events. During these events, the combination of rainfall impact and runoff resulted in massive erosion in areas of intense fire activity. Sediment laden runoff was carried overland and ran into Winslow Creek. The stream channel was inadequate to carry such flow and material. The channel responses to the massive increase in sediment and flow were various. Where the floodplain was accessible, deposits of nutrient rich material enhanced the floodplain. Where the channel was confined, the streambed cut through the existing streambed or cut laterally to accommodate the increased water and sediment.

In compliance with Section 303d of the Clean Water Act, Montana DEQ conducts ongoing water quality assessments of its streams and reports on a watershed basis using watershed units and unit codes developed by the United States Geological Survey. Red Rock Watershed has not been fully assessed by DEQ and is not included in the 2004 through 2006 planning cycle; however fourteen streams and two lakes (Upper and Lower Red Rock Lake) within the watershed are on the impairment list. For the majority of these streams, the DEQ indicates that they have insufficient data to make beneficial use assessments. Streams in this category on BLM lands include: Bean Creek, Corral Creek, East Fork of Clover Creek, Fish Creek, Hell Roaring Creek, Jones Creek, Long Creek, Peet Creek, Price Creek, and Tom Creek. There are two water bodies on BLM lands for which at least limited data is available: Odell Creek and Red Rock River from Lower Red Rock Lake to Lima Dam. The portion of Odell Creek on BLM land is located within the Centennial Valley WSA.

Montana DEQ has Sufficient Credible Data for Odell Creek and has determined that Agricultural, Industrial and Drinking Water Supply uses are fully supported. Aquatic life, Cold Water Fisheries and Primary Contact (recreation) uses are not supported and a TMDL is required. The identified probable cause of these impairments is severe erosion and sedimentation. Soils are identified as unstable and a threat to aquatic life. Probable cause is identified as severe erosion from grazing and agriculture. The BLM does not authorize grazing in the Odell Creek drainage. The ID team identified fill within the channel and floodplain associated with the historic mining road as a source of impairment to the function of Odell Creek. However, this road has been closed for over 10 years and the ID team found riparian function on Odell Creek to be improving (FAR with an upward trend).

For Red Rock River between Lower Red Rock Lake and Lima Dam, Montana DEQ has Sufficient Credible Data to make Use Support determinations for Drinking Water and Agriculture and those uses are fully supported. Sufficient Credible Data is not available to make beneficial use determinations for Aquatic Life, Cold Water Fishery or Primary Contact (recreation).

3.2.3 Issue #3: Upland Health, Upland Habitat and Associated Species

Sagebrush habitat types are the dominant vegetation communities comprising 41% of BLM-administered lands in the analysis area. This area supports a significant diversity of sagebrush species and communities, and sagebrush-dependent wildlife species. At mid to lower elevations, mountain big sagebrush and three tipped sagebrush is the dominant habitat type that provides important summer habitat for mobile wildlife species such as mule deer, pronghorn antelope, and sage grouse, and localized yearlong habitat by sagebrush-obligate species such as pygmy rabbit. Intermingled occurrences of basin big sagebrush and Wyoming big sagebrush, low sage and greasewood add to the diversity of vegetation and habitat structure. At higher elevations, moist mountain big sagebrush communities provide elk calving and sage grouse brood-rearing habitat along with dispersed spring, summer and fall habitat for numerous other species, often in association with forested habitat. Mixed sagebrush communities and localized dominance by other sagebrush species on specific sites within the broader sagebrush types often support uniquely dependent wildlife uses, such as pygmy rabbits.

Sage grouse populations and sagebrush habitat are issues for public land management due to significant habitat losses range-wide due to habitat fragmentation from conversion for agriculture, urbanization, conifer encroachment, invasive species, wildland fire and prescribed fire. Other uses such as livestock grazing may also affect sage grouse habitat. Important seasonal sage grouse habitats are centered on breeding and winter complexes. Nesting usually occurs within 2 miles of the lek, where suitable habitat is available. Brood rearing habitats require a mix of forbs and insects for a high protein diet, usually in association with riparian habitats.

Upland trend studies (Daubenmire and photo plots) completed for allotments meeting the upland health Standards generally showed a static or improving vegetative trend or ecological state for the sites evaluated. The erosion that was present was what was expected or only a slight departure from what was expected for that ecological site. Where evidence of erosion occurred, it appeared to be remnant of historical impacts. In 38 of the 41 allotments assessed, the uplands were determined to be in PFC or FAR with an upward trend.

Trend studies completed for allotments not meeting upland health Standards and comparisons with Ecological Reference Areas generally showed a static or declining vegetative trend or ecological state for the sites evaluated. There were three allotments that did not meet the upland health Standard. These included Munday Reservoir, Phalarope East and Ritchie Allotment. Upland health conditions in some areas of these allotments are being maintained (PFC or FAR with a static trend). However, in the majority of the upland areas within these allotments, there has been a shift in relative dominance of vegetation from palatable cool season bunch grasses to less palatable grasses, increaser forbs and/or shrubs. Expected composition of the large cool season bunchgrasses (e.g. Basin wildrye, needle and thread, bluebunch wheatgrass) is lower than expected for these sites. Vigor of existing cool season bunchgrasses is below expected, even considering the drought. Present erosion sometimes exceeded what was expected for that ecological site. In one site within the Phalarope East Allotment, consistent early summer use has given mountain big sagebrush competitive advantage over cool season bunchgrasses leading to higher canopies and densities of sagebrush than expected for the site.

There were conifer expansion concerns in the uplands areas along the south benches of the valley, including Price Creek, Peet Creek, Shambo Units, Duff Creek, unleased areas in the WSA, Tom Creek, Morton Individual and Davis SGC Allotments. Some open sagebrush/grasslands draws and meadows and aspen stands are being lost to Douglas-fir colonization in the absence of fire. This is likely due to fire exclusion through both removal of fine fuels since the late 1800's and more recently fire suppression.

Canada thistle was present in localized areas in bottoms and spotted knapweed was present in localized areas around disturbances such as roads. Houndstongue was found in isolated areas within the watershed. Cheatgrass expansion is a concern in disturbed areas along roads and on south facing slopes, specifically in the northwest portion of the watershed. Existing early detection and treatment efforts have been effective to date in preventing noxious and invasive species from gaining a foothold in the Centennial Valley.

The largest disturbed area in the watershed is the area that burned in an intense wildfire in August, 2003. The Winslow fire burned 13,558 acres of forest and sagebrush habitat in Idaho and Montana. Of those acres, 8946 were in Montana and 6,111 acres were on BLM administered lands within the watershed. Burn Severity Acres fell into four classes: Unburned, Low, Medium and High Severity. There were 993 acres of Intense severity acres, 955 of those acres on BLM. Fire behavior within the Winslow Creek portion of the Winslow Fire was very intense within the forested habitat. In addition to the trees themselves, the fire consumed the needles and twigs which had accumulated on the forest floor and had buffered the impact of raindrops.

The change in cover from forest to bare soil resulted in a change in water balance. In 2004 the change in hydrologic response became evident. The loss of trees and the increase in bare soil reduced the evapotranspiration portion of the water balance and increased the runoff portion. This shift in cover values associated with the soil loss equation resulted in massive soil erosion.

The bare soils created by the Winslow Fire are susceptible to invasion by noxious and invasive species. BLM is currently monitoring this area for weeds and undesirable species and treating the weeds that are detected

3.2.4 Resource Concern #1: T&E Species and Migration Corridors

Appendix C shows the special status wildlife species within the watershed.

Bald eagles are known to nest within the Centennial watershed. Large winter concentrations occur along the Red Rock River in areas where open water and prey are available. Cooperative interagency monitoring is occurring through the Montana Bald Eagle Management Plan. Recovery efforts for bald eagle and restrictions around nests have had little effect on current land use authorizations. Bald eagles are currently proposed for delisting.

Potential Canada lynx habitat on public lands is generally peripheral to more extensive habitat areas on USFS lands, with the only extensive habitat available on BLM lands occurring in the Centennial Mountains. The LCAS (2000) provides programmatic and project-level management guidelines for lynx conservation and is the basis for consultation determinations for all proposed projects.

Lynx require a mosaic of forest habitat conditions in order to hunt, travel, and rear young successfully. Lynx need mature forest for denning, but early successional forests are required for hunting. In Washington, denning sites were typified as lodgepole pine, spruce, and subalpine fir forests greater than 200 years old, with northerly aspects, mesic habitat associations, and abundant coarse woody debris(Koehler and Brittell 1990). Stands as small as 1-5 acres may be suitable as den sites, but these patches must be interconnected by forested cover.

No occupied lynx habitat occurs in the watershed, although historic lynx observations have been made in the Centennial Mountains. Limited regional distribution of lynx reduces the likelihood that potential habitat will be occupied. Lynx Analysis Units (LAU's) were defined in conjunction with the Beaverhead Deerlodge National Forest using 6th code HUCs and vegetation coverage derived from satellite imagery (SILC coverage). However, many of the 6th code HUCs on Public Lands have isolated stands of potential habitat that are not large enough to support lynx, even by combining adjacent 6th code HUCs. Two LAU's were refined using improved habitat type coverage along with the existing SILC coverage to identify moist forest habitat types within ten existing 6th code HUCs along the Centennial Mountains. The LAU boundary reflects potential habitat that could be large enough support a lynx home range and will facilitate management of the LAU's to improve lynx habitat conditions within the watershed.

The total acreage of BLM-administered land in the Centennial east LAU is 29,682 acres of which 21,425 acres is potential Canada lynx habitat. The Centennial west LAU is 20,713 acres of which 11,215 acres is potential Canada lynx habitat. The Winslow fire burned 6111 acres within these two LAU's in 2003. Of this approximately 900 acres of potential habitat burned severely and would currently be considered unsuitable (12 acres in the east LAU and 888 acres in the west LAU). This is approximately 7% in the west LAU and less than 1% in the east LAU that are considered unsuitable lynx habitat.

Under the 1994 re-introduction rules, gray wolves that are within the re-introduction area but are not within a national park or national wildlife refuge are treated as a "proposed threatened" species, rather than endangered, for Section 7 consultation purposes. Wolves occurring within the watershed on public lands are outside of the primary recovery zone, and are considered as non-essential experimental populations. Montana Fish, Wildlife and Parks (MFWP) is now the lead agency for wolf management in Montana. Wolf activity has increased in previous years and cattle depredations have been confirmed near Dell, MT (L. Bradley, MFWP, personal communication 2005). There is no pack established in the watershed but a there is a confirmed pair of transients moving between Dell and the vicinity of Red Rock Wildlife Refuge. A Montana state management plan is being developed to direct wolf management after delisting.

Public lands administered by the Dillon Field Office are outside of the Yellowstone Recovery Ecosystem, but is considered as an area where grizzly bears are likely to occur outside the recovery zone. Grizzly bear occurrences have increased in the past years and are expected to rise in the future. The Centennial Mountains act as a linkage corridor to dispersal and provide for occasional use of potential habitat. However, Interstate 15 west of the analysis area may act as a barrier to dispersal and connectivity along the Continental Divide, within the Bitterroot Recovery Ecosystem. The demographic criteria for recovery have been met in the Yellowstone Recovery Ecosystem and population estimates are 400-600 grizzly bears (USFWS, 2005.) The US Fish and Wildlife Service intends to propose delisting in 2005. The Conservation Strategy for managing this population in the future, once it is recovered and removed from federal ESA protection, was finalized in March 2003.

Special status plant species occurring within the Centennial Watershed are shown in Appendix D – Biological Evaluation for Special Status Plants.

3.2.5 Resource Concern #2: Cultural Resources

In conjunction with the Mountain Foothills Grazing EIS in the late 1970s, a Class II cultural resources inventory was conducted for a 10% sample of lands within the Dillon Field Office area. At that time, the Centennial Watershed was found to overlap the border between the Blacktail Planning Unit to the north and east and the Centennial Planning Unit to the west and south. Results of the sample inventory indicated that cultural site densities within the Blacktail Planning Unit were generally **higher** than that observed in other planning units, with an average density of 1 site per every 430 acres (1.47 sites per square mile). Similarly, results of the sample inventory indicated that cultural site densities within the Centennial Planning Unit were in the mid-range of site densities observed in other planning units, with an average density of 1 site per every 544 acres (1.15 sites per square mile). Within the other planning units of the Dillon Field Office, site densities ranged between a low of 0.5 sites and a high of 2.05 sites per square mile.

An examination of existing records on file with the BLM-Dillon Field Office has provided information on the number and type of known cultural resources and level of previous cultural resource inventory conducted on public lands within the Centennial Watershed analysis area. Within the study area, approximately 3250 acres of public land have been intensively inventoried for cultural resources at the Class III level. All inventories have been specifically project compliance related in advance of a number of proposed federal undertakings including: small range improvements (fences, water developments), road and power line rights-of-way, timber sales, and land exchanges. The inventory projects vary from as little as 1 acre, to as much as 300 acres in extent, and public lands within at least twenty grazing allotments have had no Class III cultural resources inventory at all (Cultural Resources specialists' report, p. 3).

As a result of past Class II and Class III cultural resource inventory, there are a total of 114 recorded cultural properties within the Centennial Watershed study area. Of that number 79% (n=90) are of prehistoric origin, 16% (n=18) are historic, 5% (n=6) have both historic and prehistoric components, and one site (1%) is a paleontological locality.

The prehistoric sites range in age from PaleoIndian to Protohistoric (with Intermountain ware ceramics and European trade goods). Recorded prehistoric site types include: lithic scatters (n=49); lithic scatters with hearths or FCR- fire cracked rock (n=25); lithic workshops (n=7), tipi rings (n=3); cairns or cairn alignments (n=3); and vision quest sites (n=3). Site types associated with the historic period include: cabins/foundations (n=9); roads/stage roads (n=4); cairns/sheepherder monuments (n=2); and miscellaneous historic (n=3, school, cow camp, reservoir dam). The multi-component sites consisted of four sites with prehistoric lithic scatters and historic cabins and one lithic scatter with historic sawmill. Though 114 cultural properties have been formally recorded, only a small handful (n=13) have been formally evaluated for significance and eligibility for the National Register of Historic Places. Of those sites that have been formally evaluated for National Register eligibility, six were determined NOT eligible (24BE1359, 24BE1659, 24BE1720, 24BE1746, 24BE1784 and 24BE1888), and four were determined eligible for the National Register (24BE33, 24BE1514, 24BE1639, and 24BE1655).

An examination of individual site forms also indicated that potential adverse impacts had occurred at 84 (74%) of the recorded sites. These impacts were primarily the result of grazing (n=23, trampling, etc.); natural erosion (n=21, which included wind-deflated surfaces, sheet erosion or slope wash, and stream bank erosion); inundation by Lima Reservoir (n=13); natural deterioration or decay (n=10, historic structures), as a result of Off Road Vehicle (ORV) travel or other mechanical disturbance (n=13); and disturbance by vandalism (n=4). It is recommended that these 23 sites identified as being adversely affected by grazing management, be revisited in order to determine if adverse impacts are continuing to occur (Cultural Resources specialists' report, p. 3).

To date, traditional cultural properties or traditional life-way values of special concern to Native American Groups have not been specifically identified within the Centennial Watershed study area. However, certain site types such as vision quest locations retain particular importance to most Native American Groups. For that reason, sites 24BE32, 24BE289, and 24BE434 are expected to hold religious importance to Native Americans and should be afforded special considerations.

3.2.6 Resource Concern #3: Air Quality

Air quality in the Centennial Watershed is excellent. All of southwest Montana is in attainment, meaning that the air resource meets or exceeds all National Ambient Air Quality Standards. The closest Montana Ambient Air Quality monitoring sites are located in Butte, Montana. The Montana/Dakotas BLM is a member of the Montana/Idaho Airshed Group. The Montana/Dakotas at the State level and the Dillon Field Office at the local level are in compliance with the Environmental Protection Agency's 1998 Interim Air Quality Policy for Wildland and Prescribed Fires.

3.2.7 Resource Concern #4: Socioeconomics

BLM records indicate that authorized sales of forest products from 1954 to 1992 were about 19 million board feet of sawlog material, over 110,000 post/pole size trees and over one-quarter million board feet of firewood. This product value at today's average rates would be over $3,500,000.

The opportunity for forest products related employment has declined substantially since the last major timber sale on public lands in the Centennial Valley in the early 1980's. The number of local and/or regional milling facilities that process more than one million board feet per year has declined from seven to two, neither of which are located in Beaverhead or Madison Counties. On a local basis, logging related job opportunities have declined or are non-existent due to the uncertainty of employment. Milling facilities or other timber sale purchasers presently rely on subcontracting woods workers who reside outside of the local area.

Twenty individual permittees are currently permitted to graze livestock on the allotments included in this EA. Meetings with these permittees indicate that these ranch operations have tightly woven public land grazing preferences together with private land management. Calving, breeding, haying, feeding, shipping, summer pasturing, and marketing schedules have evolved in tandem with current stocking rates and seasons of use on BLM allotments. On most cases, private land owned by the permittees is adjacent to these public land allotments. Changes in numbers of livestock, seasons of use, and/or increased labor inputs may have considerable economic impacts on individual operations. The BLM does not have access to financial or business records for permittees that graze livestock on allotments included in this EA, therefore it is impossible to provide a detailed or quantifiable discussion of ranch operations or economic conditions.

3.2.8 Resource Concern #5: Recreational Impacts/Access and Off Road Use

The Centennial Mountains Special Recreation Management Area was reported to receive nearly 27,000 recreational use visits in 2004. The majority of recreational use occurs during the fall big game hunting season. Although there are some backcountry hunting camps, both commercial and non-commercial, the majority of the hunting use is vehicle-based camping and day use. Although travel management prescriptions have been in place for this area since the early 1980's and a revised Travel Management Plan was completed in 2001, compliance with designated route restrictions continues to be a concern for both the visiting public and the BLM.

Other warm season recreational uses in the Centennial Mountains include backpacking, hiking and horseback use of the Continental Divide National Scenic Trail, as well as a number of other BLM maintained non-motorized trails in the area. Winter uses include one authorized commercial backcountry skiing outfitter and moderate levels of private backcountry skiing which is centered in the Hellroaring drainage, but occurs throughout the Centennials. Although nearly the entire Centennial Mountains is legally closed to snowmobile use, illegal use occurs throughout the range, although mostly in the Hell Roaring and Odell Creek drainages.

3.2.9 Resource Concern #6: Wilderness Characteristics

Approximately 27,691 acres of BLM-administered lands within this area are within the Centennial Mountains WSA. A study of these and surrounding lands (including USFS, Agricultural Research Station (ARS), and State Lands) totaling approximately 92,815 acres was completed in 1990 to assess the suitability of these lands for designation as wilderness. Approximately 21,774 acres of BLM-managed lands, 4,474 acres managed by the USFS, and 1,160 acres of land managed by the State of Montana were recommended for wilderness designation. Since the Centennial Wilderness EIS decision was completed, approximately 640 acres of those state lands have been added to the BLM-managed acreage. All BLM-managed lands within the WSA, whether recommended for wilderness or not, are managed in accordance with the *Interim Management Policy for Lands under Wilderness Review* (BLM Handbook H-8550-1). This policy requires that wilderness qualities (naturalness, opportunities for primitive and unconfined recreation, etc.) not be impaired until such time as Congress may make a final decision on whether to designate these lands as part of the National Wilderness Preservation System.

The Statewide Wilderness Study Report describes the area as being predominantly natural with outstanding opportunities for solitude and primitive and unconfined recreation (hiking, camping, and horseback riding). Other opportunities identified include hunting for elk, deer, moose, and black bear, exceptional wildflower viewing, wildlife photography, cross-country skiing, climbing, fishing, and outstanding scenery.

3.2.10 Resource Concern #7: Visual Resources

The Centennial Mountains WSA is designated as VRM Class I, and the majority of the surrounding lands in the mountains are designated Class II and III. Objectives for management of these classes are included in Section 1.4.4 under Resource Concern #7 – Visual Resources. There are outstanding vistas available from the high country, and the view of the mountains from the valley floor is equally impressive.

3.2.11 Resource Concern #8: Protection of Private Property from Wildland Fire

There is a threat of wildland fire to the community of Lakeview and other residences within the watershed. Limited access and the relative remoteness of private residences put this property at an elevated risk of being threatened by wildland fire.

3.2.12 Critical Element: Areas of Critical Environmental Concern

Two areas within the Centennial Watershed have been identified as proposed ACECs in the Proposed Dillon RMP. The Centennial Sandhills Proposed ACEC encompasses approximately 1,040 acres of BLM lands located within portions of Sections 21, 22, 23, T13S, R2W. The sand dunes are within portions of three grazing allotments (Centennial #20710, Sand Dunes # 20732 and Windmill # 20733). The values of concern are the sand dune complex and associated plant species of special concern. The area supports ecological processes related to sand dune migration, which are necessary for survival of the special status plant species including sand wildrye, pale evening primrose, and painted milkvetch. Loss of sand dune activity could put these values at risk. Special management would require adjustment in grazing systems to provide for management of the relevant and important values, but would maintain disturbances necessary to maintain or enhance sand dune habitat. The Centennial Mountains Proposed ACEC includes public lands lying south of the Centennial Valley road from Red Rock Pass to the West Fork of Corral Creek. It encompasses approximately 40, 715 acres of public land. The values of concern in this proposed ACEC are scenic values, grizzly bear, lynx and wolf habitat, wildlife migration, Whipple's beardtongue (special status plant) and avalanche ecology. Proposed management would limit certain uses that cause habitat fragmentation and increase wildlife mortality risk within the Centennial Mountains.

3.2.13 Critical Element: Wild & Scenic Rivers

Bear Creek was determined to be an eligible river under the Wild & Scenic Rivers Act due to the presence of a genetically pure population of westslope cutthroat trout. The tentative classification for this river segment was "scenic." (Classification of a river is related to the level of development that exists along the river corridor, and is not related to the type of values that the river may contain.) The Proposed RMP recommended Bear Creek as not suitable for inclusion in the National Wild & Scenic Rivers system. However, in accordance with the Wild & Scenic Rivers Act, this stream segment must be managed in a way that would maintain its original classification as a "scenic" river by protecting the identified outstandingly remarkable value and any conditions that might otherwise qualify it for classification as a "scenic" river (i.e. -- level of development).

4.0 Environmental Consequences

4.1 Introduction

This chapter discloses the scientific and analytic basis for comparison of the alternatives and describes the probable consequences (impacts, effects) of each alternative on the driving issues and resource concerns. The environmental consequences are analyzed and disclosed by alternative. This chapter also discloses the cumulative, or combined, impacts of alternative actions with past, present and reasonably foreseeable actions within the watershed. The BLM received several comments related to wildlife populations and population viability. The BLM manages habitat, but is not authorized to manage wildlife populations, so comments related to wildlife populations will not be addressed in this EA.

4.2 Predicted Effects of Alternatives

4.2.1 Predicted Effects Common to All Alternatives Including the No Action

Identified safety hazard concerns will be mitigated by cutting hazard trees along the Price-Peet Road to avoid dead and dying trees falling onto the roadway, and rerouting the Price Creek Road (BLM Road #1806) where a stream meander is cutting into the road.

In the proposed Centennial Mountains ACEC, the integrity of wildlife migration corridors would be maintained. Landscape design principles for vegetation treatments are consistent with recovery plans for T&E species and no new permanent roads would be constructed. Table 14 displays the miles of open road and road density on Public Lands within the analysis area.

Table 14: Miles of Open Road and Road Density for All Alternatives

Alternative	Miles of Open Road	Road Density (mi/mi^2)
Alt. A. No Action	85.8	0.67
Alt. B Conventional	94.0	0.73
Alt. B Helicopter	91.0	0.70
Alt. C Conventional	92.5	0.72
Alt. C Helicopter	90.8	0.70

The impact analysis for lynx was analyzed on the potential habitat existing within two Lynx Analysis Units (LAUs) on BLM-administered lands. Criteria used to determine unsuitable lynx habitat post implementation was based on the following: potential habitat affected was calculated by estimating the acreage within each unit that is subject to actual treatment and whether the residual cover, as well as adjacent cover, would remain suitable. This was calculated using 50% of the potential habitat in the harvest units and prescribed burns as being unsuitable for 15 years post implementation. This estimate is based on the fact that objectives and design features were incorporated to be consistent with the LCAS and implementing techniques that will enhance potential lynx denning habitat and foraging habitat. This would be done by maintaining certain stand characteristics by selective harvest, piling slash to create denning structures and stimulating aspen regeneration. Table 15 displays acres that are expected to be unsuitable in each LAU by alternative.

Table 15: Lynx Analysis Units – Unsuitable Acres for Each Alternative

LAU Acres of Potential Habitat		Unsuitable Acres			% LAU Unsuitable for 15 yrs		
		ALT A	ALT B	ALT C	ALT A	ALT B	ALT C
East	21,425	0	1382	916	0	6.5%	4%
West	11,215	61	882	515	.5%	7.8%	4.6

Implementation of any of the alternatives would not appreciably affect wolf prey base. Wolves occurring within the watershed are outside of the primary recovery zone, and are considered non-essential experimental populations. There is no pack established in the watershed but a pair has been confirmed in the vicinity of Red Rock Lakes National Wildlife Refuge. Primary prey species for wolves in the analysis area are deer, elk, and moose. Wolf-livestock conflicts will generally result in removal or relocation of offending wolves and may preclude the potential establishment of stable packs within the watershed.

Signs identifying proper food storage requirements placed at trailheads and major access points will minimize grizzly bear/human conflicts. This analysis area receives high recreational use during fall big game hunting seasons. To date no grizzly bear conflicts have been documented, although sightings have increased in previous years.

The Wildland Fire Use Plan implemented for the Centennial Mountains WSA would allow for and maintain a diversity of seral plant communities across the WSA which would provide ecological niches and habitats to support a variety of native plant species including special status species.

No impacts from any of the three alternatives are anticipated on the four special status plant species that are known only from the greater affected area (*Draba ventosa, Thlaspi parviflorum, Townsendia condensata,* and *Townsendia florifera*). They either occupy habitats not normally frequented by cattle or are located far enough away from the project area that the livestock management, range improvement projects or vegetation treatments proposed will be of little or no consequence.

Of the twenty-five special status plant species found in the project area, twelve (*Astragalus junciformis, Astragalus terminalis, Balsamorhiza macrophylla, Draba globosa, Erigeron asperugineus, Ipomopsis congesta ssp. crebrifolia, Lesquerella pulchella, Orogenia fusiformis, Penstemon whippleanus, Stellaria jamesiana, Sphaeralcea munroana,* and *Sphaeromeria argentea*) would not be impacted by any of the alternatives. These species either inhabit steep slopes or alpine habitats rarely frequented by livestock or they are not considered palatable and their habitats typically receive light to moderate grazing use. Typically these plants occupy dissimilar habitats than those proposed for forest health treatments. The risk of any management proposals impacting these species is relatively low; however indiscriminate or random placement of livestock supplements could cause trampling of individual plants or populations particularly those species of the sagebrush steppe.

The potential effects of the various alternatives on special status plant species are summarized in Appendix D - Biological Evaluation Summary for Special Status Plants.

4.2.1 Predicted Effects of Alternative A - No Action (Continuation of Current Management)

Under this alternative, site-specific objectives would not be met and some allotments would continue being out of conformance with the Standards for Rangeland Health (43 CFR 4180).

Issue #1 - Forest and Woodland Health:

The only harvest activity in the Centennial Valley would be the removal of dead or dying trees from approximately 200 acres along the main Price-Peet Road. This would reduce the existing public safety hazard posed by trees that could fall onto the road, and reduce or eliminate the effects associated with non-regulated firewood gathering. Areas outside of the treatment unit along the Price-Peet Road would continue to be subjected to less regulated firewood cutting and removal, which may result in pioneering new trails, potential spread of weeds, and untreated concentrations of slash, both inside and outside of the Centennial Mountains WSA.

Bark beetles would continue to cause mortality of lodgepole pine, Douglas-fir and subalpine fir. The effect of this would be increased tree mortality, increased fuel loading, and the potential for more severe impacts from wildland fire and insects and disease as compared to historical levels. Without active treatment, forest health would continue to decline, particularly in the Douglas-fir communities. The density, structure, and species composition of these stands would continue to be departed from historic conditions without a natural disturbance. In the lodgepole pine types, openings created by mountain pine beetle activity would increase the structural diversity. The new cohort of lodgepole pine trees that establishes in these openings would form a new age class that would not be susceptible to mountain pine beetle for the next 40 to 80 years. However, due to the high fuel loading associated with standing and down large woody material, there is a high likelihood that if a fire occurred, these patches would be completely consumed and structural diversity would be lost.

No prescribed fire is proposed in this alternative, and therefore planned restoration of woodlands would not occur. Implementation of a Wildland Fire Use Plan would permit the line officer the option of allowing wildland fires to burn if they are within set parameters. This would provide resource benefits associated with periodic burning and create breaks in fuel continuity, thus decreasing the potential for large-scale wildfire occurrence. However, with a lack of preparatory mechanical and/or prescribed burn treatments, there would be fewer situations where natural ignitions would be within parameters and allowed to burn. The probability of natural ignitions burning within the set parameters will continue to decrease as fuels accumulate and the potential for wildfires to threaten private property increase.

Aspen, limber pine and whitebark pine would continue to decline. Without disturbances that would favor new aspen and whitebark pine regeneration, it would likely become non-existent in some areas.

Issue #2 - Riparian, Wetland and Aquatic Habitat and Associated Species:
Under Alternative A, the riparian health concerns identified in the Centennial Assessment would not be addressed and the objectives would not be met. Riparian and fisheries habitat conditions and trends would continue. Riparian areas currently in a downward trend would continue in a downward trend without changes in management. On streams that received a FAR downward or static rating, this could lead to a decline in fish habitat conditions. Areas where channel alteration has caused changes in channel morphology resulting in reduced channel maintenance and sediment transport functionality would continue this trend under the Alternative A.

Under current livestock management, sedge utilization in some riparian areas and meadows would remain higher than preferred for maintenance of proper functioning streams and riparian plant communities. Site specific areas where palatable woody species are currently being hedged by ungulates and little or no regeneration is evident would continue this trend under Alternative A. Decreased aspen, willow and sedge dominated communities contribute to decreased biodiversity by reducing habitat available for amphibians, migratory birds, nesting waterfowl, and reducing the available browse for wild ungulates. Season long permitted grazing on some allotments has allowed declining conditions and led to excessive trampling along Red Rock River and associated tributaries.

Many of riparian and wetland habitats would be subjected to heavy or improper grazing under Alternative A. Trampling by livestock may benefit many rare plant species by creating mesic microhabitats on the tops and sides of hummocks, and grazing may also reduce the vigor of taller grasses that shade many of the diminutive rare wetland species. However, improper grazing management and trampling can reduce species diversity, potentially impacting these plants and increasing the chance of exotic invasion (MNHP 2003). Improper grazing management favors nonnative species such as Kentucky bluegrass, which is highly competitive with native herbaceous riparian plants and can create abnormal hydrologic heaving which interrupts the hydrologic cycle, energy flow and soil moisture storage in riparian and wetland habitats, which limits their ability to support globally and state rare plants.

The potential for high severity wildfire is the highest under Alternative A. A high severity burn which converted forest habitat to bare ground would be expected to produce shifts in the water budget. In this case, evapotranspiration and infiltration would decrease. Runoff, streamflow and potential for erosion would increase. Sediment laden runoff would likely be carried overland and into stream channels. In confined channels, floodwaters would cause channel erosion. Sediment laden floodwaters would build floodplains where confined channels become unconfined and floodwater gains access to floodplains. If a high severity fire occurred in the watershed, impacts to fisheries could be severe depending on the location of the fire. Increased runoff and sediment input would have a negative impact on WCT populations, at least in the short term. Conversely if a low severity fire occurred, impacts to the fishery in Price Creek could be beneficial: a reduction of conifers in the drainage would increase hydrologic functions and could provide additional habitat for WCT.

Impacts from mechanical vegetation treatments along the Price-Peet Road would be expected to have no impacts to WCT habitat in Price Creek.

Issue #3 - Upland Health, Upland Habitat and Associated Species:
Under Alternative A, the decreasing trend of cool season grasses on the three allotments not meeting the Upland Standard (Phalarope East, Munday Reservoir and Ritchie) would continue. Progress would not be made towards meeting PFC or site specific objectives under Alternative A on the three allotments of concern.

Repeated annual defoliation during the early and mid growing season, particularly during early flower development, usually has the most negative impact on cool season herbaceous plants growing in the intermountain sagebrush steppe (Daubenmire 1940, Stoddart 1946, Blaisdell and Pechanec 1949, Heady 1950, Wilson et al. 1966, Mueggler 1967b, Trlica and Cook 1971, Harris and Goebel 1976). Because of dietary preference, spring grazing by cattle gives unpalatable shrubs or low production grasses a competitive advantage over cool season perennial bunch grasses. The sensitivity of these grasses to grazing may be as much or more due to the competitive interaction with ungrazed or warm season species such as sagebrush or blue grama, respectively. The effect of selective grazing on interspecific competition may override a plant species tolerance to grazing (Archer and Teizen 1986). Grazing avoidance-type plants often gain the competitive advantage over grazed plant species (Archer and Smeins 1991).

One of the goals of the *Management Plan and Conservation Strategies for Sage Grouse in Montana* (draft July 2002) is to "Manage grazing to maintain the soil conditions and ecological processes necessary for a proper functioning sagebrush community that addresses the long term needs of sage grouse and other sagebrush associated species." Management actions would not be implemented to "enhance" sagebrush dependent species under this alternative.

Current management does not promote allowable use guidelines to ensure residual herbaceous cover. Loss of habitat is the greatest threat to pygmy rabbits in Montana (Rauscher 1997). Forage preference for this species includes wheatgrass and bluegrass in summer and almost exclusively big sagebrush in winter (Foresman 2001). This alternative may not provide for adequate herbaceous cover for nesting sage grouse or pygmy rabbit foraging habitat in some areas.

No fences would be modified under this alternative, and fences that are not meeting BLM specifications would continue to impede wildlife movements and may cause mortality. Conifers would continue to encroach into sagebrush/grassland habitat and would be converted into forested habitat, thereby creating a net loss in sagebrush habitat.

As described in Issue #2, wildfire risk to forested habitats would continue. High severity burns would continue to have the potential to convert large expanses of forested habitat to bare ground, increasing the potential for severe erosion.

Resource Concern #1 - T & E Species and Migration Corridors:
Existing conditions and trends would continue or be maintained until altered by natural disturbances. Current management would continue and allotments that were not meeting riparian standards would not improve and may not provide adequate foraging habitat for lynx. Fuels treatments would not be implemented and continued decline of aspen in the watershed would persist. Existing security cover along this migration corridor for ungulates and linkage corridor for large carnivores would be retained. However, the quality of aspen habitat is declining, and aspen stands could be lost without active management.

Under Alternative A, livestock management and permitted numbers would remain the same with no new sheep allotments permitted, and recreational use is expected to continue to increase. Road density within the watershed on BLM-administered lands under the RMP proposed alternative would be .67 mile/sq mile which is below the 1 mile/sq mile recommended under the GBRP (see Table 14). The Centennial WSA is managed as a roadless area and largely provides the majority of the suitable habitat in the watershed.

Approximately 61 acres would be considered unsuitable for potential lynx habitat under this alternative by authorizing fuelwood cutting of dead timber along the Price-Peet road #1805 (see Table 15). Any disturbance would be localized and would not substantially increase existing uses.

No impacts are anticipated from winter recreational use as the WSA is a designated roadless area and snowmobiles are prohibited, and the Price-Peet Road has seasonal travel restrictions in place from December 2 to May 15. All forestry treatments would occur between December 2 and October 15.

Resource Concern #2 - Cultural Resources:
As discussed in Section 2.3.1, any direct impacts from any newly proposed range improvement or vegetation treatment projects would be avoided through project redesign or abandonment. Existing grazing management would be expected to continue to impact approximately 20% of the previously recorded cultural properties (see discussion in Section 3.2.5) without any potential improvement of conditions anticipated. Poor forest health and the increase of hazardous fuel loads would create the potential for catastrophic fire which would adversely affect cultural resource values.

Resource Concern #3 - Air Quality:
With the exception of burning residual landing slash (if this material is not removed for biomass utilization) there would be no further management ignited treatments. The slash material under this alternative would produce less smoke emissions since it is dead/dying and typically has less moisture content. This alternative would be the least intensive of any alternative and therefore would produce the least smoke emissions from management generated activity, but would leave the highest risk for larger, more intense wildfires.

Smoke emissions from potential wildfires could be significant depending upon the size, season, and severity.

Resource Concern #4 - Socioeconomics:
The increased availability of firewood along the open Price-Peet Road from Unit PC3a would benefit the local community that relies upon a reasonably close and accessible source of fuelwood. With increased limitations of use and the closure of roads on public and private lands in southwest Montana, firewood use areas are becoming more scarce.

It is estimated that up to 150,000 board feet of dead or dying timber would be harvested in this alternative. Depending upon the tools utilized to access the decked material, the potential stumpage revenue could vary from $15,000 to as high as $30,000. Indirect monetary benefits to the regional economy could be as high as ten times these stumpage values.

The current economic trends and fluctuations related to livestock grazing and recreational use within the Centennial Watershed would continue.

Resource Concern #5 - Recreational Impacts/Access and Off Road Use:
Salvage harvest along the Price-Peet Road corridor would have minimal impacts to recreational use due to harvest activities being conducted outside of the big game rifle season. Although there is some recreational use in this area during other times of the year, use levels are generally light except during the big game rifle season. Over the long term, harvest activities would improve safety for recreationists traveling along the Price-Peet Road.

Resource Concern #6 - Wilderness Characteristics:
Continuation of current management within the WSA would allow current trends to continue relatively undisturbed. The impacts of human activity in the area would be the least of the three alternatives during most years, providing greater opportunities for solitude and primitive types of recreation. Wildfires that may occur in the area in the future would be of a size and intensity similar to, or greater than the recent Winslow Fire, which would cause short-term intense influxes of human activity which would interfere with visitors' opportunities for a wilderness experience. Opportunities to allow natural fires to burn in the area "within prescription" according to the Wildland Fire Use Plan would be very few since fuel loading would be a limiting factor in most circumstances. Although fewer identifiable changes to the area vegetation would be initiated by management activities, it would continue to move toward a less natural vegetative community, thereby interfering with the natural processes in the area over the long term.

Cutting trees within one tree length of the Price-Peet Road within the WSA when they are considered an imminent threat to public health and safety would create periodic short-term intrusions on wilderness values. If these trees are left on the ground in easy reach of the road corridor, it will likely be sought after for public firewood removal, and create difficulties with enforcement of the regulations prohibiting firewood cutting in WSAs. Posting the WSA boundary as off limits to firewood cutting should help mitigate these impacts.

The potential for the loss of whitebark pine, a significant food source for grizzly bears, would reduce the potential for wilderness visitors to experience the presence of the grizzly bear in its native habitat.

Resource Concern #7 - Visual Resources:
The salvage harvest proposed in the area of the Price-Peet Road is within an area managed as VRM Class III. The level of change to the characteristic landscape should be moderate.

The area of the proposed salvage harvest is dominated by rolling hills dissected by drainages and intermittently vegetated by trees and shrubs creating a coarse visual texture. Past management activity is evident on the Price-Peet Road; there are at least 11 old treatment units directly visible from the road at various stages of regeneration. The proposed salvage would only remove trees within the road corridor, and would have a minor impact on the visual elements of line, form, and texture. Proposed actions in this alternative would be consistent with management of the area for VRM Class III objectives.

Resource Concern #8 – Protection of Private Property from Wildland Fire:
Wildland fire suppression would continue in accordance with the Dillon Field Office Fire Management Plan for areas outside of the Centennial Mountains WSA. In the long term, fuels would continue to accumulate and increase the potential for wildfires to threaten private property.

The salvage of dead/dying conifers in Unit PC3a would reduce dead fuel accumulations, which may provide a minor benefit for suppression efforts of wildland fires in a limited area along the Price-Peet Road.

4.2.2 Predicted Effects Common to Alternatives B and C

Herbaceous vegetation would increase within all forest health treatment areas. The BLM does not intend to increase authorized livestock use as a result of increased herbaceous vegetation. However, it is expected there would be increased ungulate use in the treated areas because of the increase in palatability as well as production of herbaceous vegetation. This would change distribution and use patterns of herbivory (both wild and domestic) within the affected allotments for five or more years. There may be a short term increase in soil erosion within treated areas, but the long term effect would be decreased soil erosion due to increased cover of herbaceous vegetation. Re-introducing natural disturbance regimes would provide for a diversity of successional stages in sagebrush habitats.

Continued livestock grazing will affect composition of vegetation due to dietary preference and selectivity of forage. Overall effects under action alternatives would be positive and have been developed to address site specific objectives.

With the exception of the range improvement projects that would be removed, existing improvements would remain permanent features within the watershed. All existing or proposed water developments would have escape ramps installed to minimize mortality to birds and small mammals. Fence modifications would be made to existing fences not meeting BLM specifications to reduce the conflicts with wildlife movements and mortalities, however minimal loss is still expected. Fence design features are outlined in Section 2.3.3.

Salting/mineral placement would be located in the uplands away from riparian corridors to minimize riparian impacts and facilitate better livestock distribution. Stock tanks, mineral placement and trailing along fences would cause some localized sagebrush trampling that would be considered incidental. The proposed water developments are designed to improve livestock distribution and would provide increased water distribution for wildlife as well. However, in the past, some spring developments have tended to dry up or reduce surface flows at the source and the associated drainage and riparian habitat after they are developed, which could be detrimental to existing wildlife use. Design features for spring developments listed in Section 2.3.3 should mitigate these impacts.

Using use guidelines as tools to indicate livestock movements should improve overall watershed conditions. Up to 50% use on forage plants in the uplands during spring and summer treatments should benefit water infiltration, plant vigor and leave adequate residual cover and forage for wildlife. A 4” stubble height should benefit streambanks and bank-holding riparian vegetation, and 50% use on current year’s growth of palatable woody riparian species (willows and cottonwoods) should benefit maintenance or expansion of these species.

4.2.3 Predicted Effects of Alternative B

Issue #1 - Forest and Woodland Health:

The removal of conifers from within and around aspen stands and the use of prescribed fire would revitalize these stands for a 20 to 50 year period. The placement of slash and other non-merchantable material within these aspen stands would help protect aspen regeneration from browsing. Ground based yarding would further enhance aspen regeneration response by disturbing the aspen root system. Helicopter yarding would have no additional beneficial effect upon aspen regeneration response.

Salvage of dead/dying conifer trees in the lodgepole pine and Douglas-fir types would reduce substantial amounts of the large woody fuel accumulation, resulting in decreased rates of spread and intensity of natural or human-caused wildfire within the treated area. Reducing available fuels would improve the effectiveness of wildfire suppression efforts during the summer burning season. Removal of these larger fuels would reduce some of the material that could be recycled by fire or biological breakdown. The harvest limitation of leaving 20% of the dead lodgepole pine and 10% of the dead Douglas-fir, as well as slash generated from management activities, would be sufficient to retain 10 to 20 tons of slash per acre. This is generally accepted as sufficient biomass retention in the intermountain region.

Mechanical treatments would decrease intrastand competition on the areas treated and would increase available moisture by allowing more precipitation to reach the forest floor and not be lost to evaporation and sublimation. Increased available moisture would help reduce plant stress from current drought conditions. Follow up prescribed fire treatments would be used to reduce fuels from the mechanical treatment and recycle nutrients from the slash. Post fire residual materials that are left would be generally be in the 3" or larger size classes which would create microsites of shading and moisture retention. Post mechanical and prescribed burn treatment conditions, along with more available sunlight would increase diversity and production of ground vegetation. In the lodgepole pine types, openings created by patch clearcuts with small retention patches within them would increase the structural diversity. When a new cohort of lodgepole pine trees becomes established in these openings, it would form a new age class that would not be susceptible to mountain pine beetle for the next 40 to 80 years. Creating breaks in continuous stands would decrease the potential for widespread stand replacing wildfires and aid in suppression activity.

Salvage alone in a relatively small area would have limited effect on the current mountain pine beetle epidemic or the increasing occurrence of Douglas-fir bark beetle. Sanitation harvest and thinning in addition to salvage, as proposed in Alternative B, would increase the resiliency of the residual stand to bark beetles. The reduction in forest canopy where harvest operations occur would increase mortality of spruce budworm larvae as they feed in Douglas-fir.

Restoration of the Douglas-fir savannah structure would increase the potential for these stands to survive a wildfire event. There may be a lag time of up to 5 years before these older trees respond to less competition, due to the residual effect of prolonged overstocking and drought conditions. Some of the larger Douglas-fir may be attacked and/or killed by Douglas-fir bark beetle during this period, which is more likely to occur in the eastern portion of the Centennials. Overall, a savannah restoration treatment would increase residual stand health for 20 to 40 years and greatly decrease the adverse effects of spruce budworm. A younger cohort of Douglas-fir would be maintained in the Price Creek drainage to eventually replace some of the older Douglas-fir.

In areas currently occupied by subalpine fir, merchantable subalpine fir would be cut and removed. Advanced subalpine fir regeneration exists, and unless it is intermixed with aspen, it would be left in place and subject to the effects of the subsequent prescribed burn treatments. Opening small patches in or around Engelmann spruce would promote a younger cohort of this species and increase stand diversity in this forest type. In both subalpine fir and Engelmann spruce habitats, snow deposition would increase in disturbed areas. Increased water storage in mid to higher elevations would provide more available moisture in some areas during the growing season.

Thinning of up to 10 acres of small diameter lodgepole pine for post/pole products in Unit PC7 would increase the health of the residual trees by removing trees from currently over stocked stands.

Utilization of prescribed fire in whitebark pine and limber pine habitats would promote regeneration of these species by providing a suitable seedbed for caching of seeds by the primary seed disperser for these species, the Clark's nutcracker. It would also provide regeneration opportunities for the alternate host of white pine blister rust, *Ribes spp.*, which may increase blister rust occurrence.

The implementation of prescribed burning in units HR1, LV2 and BC1 would create "buffer areas" that would help facilitate wildland fire use. Allowing fire to play a more natural role in the WSA would reduce fuel accumulations and continuity, resulting in lower future fire severity and a more natural mosaic burn pattern. Treating these units allows greater opportunity for a wildland fire use fire to burn naturally within the Centennial WSA without threatening WUI and without leaving the Centennial WSA.

Special status plant species *Aquilegia formosa* and *Viguiera multiflora* could potentially be affected by proposed actions especially in areas slated for fuels and/or forest health treatments. Habitat for these two species could possibly be maintained by treatments that create a more open canopy. Research indicates that a similar species, *Aquilegia canadensis,* survives fire but does not necessarily increase or decrease in abundance following disturbance, and may be top-killed in some instances (Sullivan 1992).

Alternative B would allow more opportunities for noxious and invasive weeds in disturbed areas in the short term. However, the goal is to reduce large catastrophic wildfires, which would reduce opportunities for noxious and invasive plants in the long term. Standard operating procedure in treatment areas is to inventory and treat for noxious weeds prior to and for several years following mechanical or prescribed fire treatments. This would mitigate the possibility of infestations of undesirable vegetation becoming established in these areas.

Utilization of helicopter harvest operations would decrease the potential for soil disturbance and skid trail compaction. It could increase crown breakage or windthrow in shallow rooted tree species on a localized basis.

Issue #2 - Riparian, Wetland and Aquatic Habitat and Associated Species:
Management changes associated with revisions to AMPs would result in improvements to riparian vegetation, stream channel morphology and sediment transport. While there are different opinions within the scientific community regarding the best season of use, there is consensus that the length of time animals spend in a riparian area can be a significant factor in the condition of that area. According to Marlow and his colleagues (1991), "The most critical aspect in any grazing plan for the protection of riparian areas is the length of time cattle have access to a particular stream reach." Myers (1989), reviewing 34 allotments in southwestern Montana, concluded, "duration in grazing treatments becomes a key factor in determining the severity of damage". Changing the livestock grazing season to 15 days every other year within the Brundage Bridge and Passmore SGC Allotments would allow a quick recovery of the vegetative component along these reaches of the Red Rock River and Jones Creek, respectively. Stream channel morphology would also improve, albeit at a slower rate because physical changes

require more time. An upward trend in herbaceous vegetation vigor and streambank stability is expected on streams that were FAR.

The proposed water developments would improve site conditions at spring sources by fencing the source and developing water away from the source. This would improve site specific riparian concerns and improve habitat conditions for associated species. The development of offsite water should substantially reduce trailing along streams. This is expected to improve channel morphology and increase composition of sedges along the greenline. However, the planned spring developments could de-water low flowing springs and decrease the available riparian habitat for sage grouse broods if no overflow is available to be returned back into the channel. Fencing of the source would protect the habitat in the immediate vicinity of the source. However, development of stock tanks creates localized disturbance during construction and mechanical trampling of sagebrush around the stock tanks create a site that can be conducive to invasive species.

Establishing a 4 inch sedge stubble height guideline watershed-wide should improve cover and forage for wildlife. This guideline would limit annual utilization of special status species *Carex idahoa*, and would be partially effective in protecting stream-side and meadow habitats that support rare plants. A 50% use guideline on current season growth should allow for expansion and improved structure in woody communities that would benefit dependent wildlife uses.

Livestock impacts to fish habitat on Fish Creek would be expected to decrease with the proposed change in management within the Fish Creek Allotment. Using a deferred rotation with relatively short grazing periods (20 days in June and 14 days in Sept) and allowable use standards, as well as eliminating the summer use that is authorized under Alternative A would allow for improvement in stream bank conditions and an increase in sedges and willows (within site potential) on Fish Creek. Kovalchik and Elmore, 1991 indicated the deferred rotation grazing systems are moderately compatible for willow-dominated plant communities (highly compatible for sedge management and showed no change to highly compatible for willows depending on duration of season and topography).

In the Monida Hill allotment (including Phalarope East allotment), complete rest every third year, use after seed ripe every third year and a shorter grazing period in each unit is expected to improve the condition of the wetlands and riparian areas within the allotment. To preclude overuse, a 4" sedge stubble height and 50% annual production on willows guideline would be used to help determine pasture moves. Kovalchik and Elmore, 1991 showed generalized relationships between grazing system and willow and sedge response on willow-dominated plant associations. They indicated that rest rotation grazing systems are moderately compatible for these types of plant communities (highly compatible for sedge management and showed no change to highly compatible for willows, depending on the length of the fall season). With the addition of the allowable use levels and shortened grazing periods by pasture, predicted effects of this alternative are an increase in sedges, an improvement of the width/depth ratio (channel morphology) along the steam reaches, and healing of the pugging in the wetland areas. Willows should show some increased recruitment, but would not respond as quickly as the herbaceous component because some browsing may occur during the fall treatment.

In the Passmore SGC allotment, fall use would allow herbaceous vegetation to grow to seed ripe during the growing season and implementing 4" sedge stubble height guideline should allow conditions improve. Fencing out the Passmore SGC allotment, which includes stream reaches CE109 and CE110 on Jones Creek and authorizing a 15 day use period with 32 cows every other year would likely allow for better bank stability and streamside vegetation recovery. This would lead to better fish habitat conditions.

In the Price Creek allotment, livestock from the Lima Reservoir allotment cross the reservoir during low flows in the fall and late season grazing along the south side of the reservoir has resulted in limited residual ground nesting cover for waterfowl in the spring. Trumpeter swan and waterfowl nesting requirements may not be met along this section of shoreline under this alternative. Offsite water developments in the Price Creek pastures would allow for better livestock distribution and could further reduce livestock impacts to fisheries and riparian habitat in Price Creek

In the Brundage Bridge allotment, implementing a 4" sedge stubble height requirement, introducing rest, and authorizing a 15 day grazing period would improve the habitat and move it toward PFC. The response in riparian woody species is expected to be slower, but 50% use guideline for willow species would monitor the browsing impacts.

The degree of impact from prescribed fire treatments on the streams supporting WCT and other fisheries would be dependent on final location and size of the unit, soil type, topography and mitigation measures used. Based on the proposed unit locations and size, there could be none to minor impacts associated with sedimentation from the proposed burn treatments. The use of prescribed fire in restoring upland and forest health could improve stream habitat in general and fish habitat in particular in some areas. Increased water infiltration would occur with a reduction in conifers which is expected to increase hydrologic functions in some drainages to the benefit of fisheries and aquatic health.

Impacts associated with these treatments would come primarily in the form of sediment runoff and from increased livestock use in treated areas adjacent to streams as more forage becomes available after the treatments. However, two growing seasons of rest from livestock grazing after prescribed burn treatments should mitigate this effect. Prescribed burns away from streams would improve distribution and reduce impacts to riparian areas.

Based on the proposed commercial timber unit sizes, locations and the low number of stream crossings and roads, the impacts to fish habitat in Price and Bean Creeks are expected to be none to minor impacts only. There is the potential for additional sediment input to both creeks from road runoff, which could cause localized minor impacts to WCT habitat in these two streams. However, fish habitat needs overall would not be jeopardized.

The use of helicopter logging in the Price Creek and Bean Creek units would reduce the risks to riparian vegetation, stream channel morphology, sediment transport and WCT habitat from sedimentation that is more likely to occur using conventional logging methods. However there could still be minor impacts from helicopter logging methods from installation and use of skid trails within the units. Using conventional logging methods would increase the risk of impacts from these activities primarily by increasing the amount of ground disturbance during yarding. Increasing the extent of buffer zones adjacent to the creeks would likely mitigate these risks.

Fish habitat may incur very short term localized impacts. Long term effects are expected to be beneficial. Increased water flow could increase available habitat for WCT and other aquatic species. Removal of the existing crossing on the West Fork of Price Creek may be beneficial to fish habitat. Overall fish habitat needs would be met or improved under this alternative.

The risk of wildfire and extreme fire effects would be reduced under this alternative. The potential for high severity fire which converts forest habitat to bare ground would be reduced. There would be less potential for erosion than in Alternative A, and therefore less potential for sediment laden runoff to be carried overland and into stream channels. The potential of increased streamflow would be less than Alternative A.

Issue #3 - Upland Health, Upland Habitat and Associated Species:
Increasing growing season rest across allotments is expected to improve upland health by increasing vigor, cover and density of cool season bunchgrasses. Increased production would also provide additional forage for antelope, elk and mule deer. Increased cover and density of cool season bunchgrasses would also improve hydrologic processes by allowing better water infiltration and less run-off and erosion. Sagebrush obligate species such as antelope, sage grouse and pygmy rabbits rely heavily on the composition of sagebrush and herbaceous vegetation present in the watershed. By implementing 50% allowable use levels and deferred rest rotation should ensure maintenance of this habitat and improve screening and hiding cover that is vital for survival of these species. Fence modification, removal and construction using the specifications to facilitate wildlife passage (see Section 2.3.3) will help minimize impacts from collisions, but will not eliminate them.

In the Antelope Peak Allotment, the alternating growing season rest and later turn out date would allow the cool season bunchgrasses to regain vigor which would increase production and reproductive ability of these plants.

In the Monida Hill Allotment (including Phalarope East), a three pasture rest rotation system (spring, fall, rest) would allow growing season rest during two years out of three. This amount of rest from defoliation during the flowering stage would ensure increased plant vigor, production and reproductive ability of cool season bunch grasses. From studies in the three-tip sagebrush/bluebunch wheatgrass habitat type, Laycock (1962) concluded that damage from heavy grazing is increased by early and continuous spring long use and by grazing the same areas during the same part of the spring season each year. He noted that grazing under spring rotation allowed the range to improve.

In the Mud Lake Allotment (including Munday Reservoir and Munday East) a four pasture deferred rotation system is proposed. Under this system, three pastures would be used during the growing season of cool-season grasses (June) only one year out of three. The expected results would be increased frequency, cover and vigor of cool season bunchgrasses, especially in the Reservoir Pasture where the upland health standard was not met.

Deferring grazing from 5/1 to 6/1 on the Antelope Peak, Monida Hill, Phalarope East, Mud Lake Field, Munday Reservoir and Munday East allotments would help allow cool season grasses to develop and maintain residual cover during the nesting season for sage grouse. Combining the Pharolope East allotment in the rotation with the Monida Hill allotment allows for a rest rotation and allows more flexibility to improve existing conditions and help meet habitat requirements. Conditions should improve similarly for Mud Lake by combining Munday Reservoir and Munday East into the rotation thus allowing for a four pasture rest rotation.

In the Ritchie Allotment, under this alternative, cool season bunchgrasses are expected to increase in vigor, cover and frequency.

Under Alternatives B, some rare plant populations would be subject to an early grazing season while some would be grazed after seed set each year. Spring and early summer use may prevent seed production while deferred use should maximize the opportunity for these plants to produce seed. Habitats supporting rare plants that receive periodic year-long rest from livestock grazing would provide the greatest opportunity for seedling establishment. *Puccinellia lemmonii* is a cool-season bunchgrass, so annual utilization guidelines proposed under Alternative B should maintain populations of this state rare grass.

Prescribed fire in the sand dunes (Units SD1, SD2, and SD3) would increase early seral habitat for endemic special status plant species in the Centennial AMP, Sand Dune and Windmill allotments. The proposed follow-up monitoring and adaptive management with a planned 20 – 30 year fire return interval should restore or mimic the natural disturbance regimes necessary to maintain the three special status plant species known only from the Centennial sandhills (*Astragalus ceramicus var. apus, Cryptantha fendleri* and *Leymus flavescens).*

As described in Riparian, the risk of high severity wildfire to forested habitats would be reduced, and the potential for severe erosion would be less than Alternative A. Removal of larger fuels would have the potential to reduce adverse soil effects from longer duration, higher intensity summer condition fires within the treatment area. Utilization of conventional harvest operations would increase soil scarification, and some localized erosion could occur. There is potential for increased soil compaction on skid trails. It is expected that increased vegetation response and the effects of freeze/thaw cycles would mitigate soil compaction effects over the next 10 to 20 years.

The allotments listed in Chapter 2 as not having any proposed management modifications were meeting biodiversity standards and are providing adequate wildlife habitat. Impacts to sagebrush dependent species from Alternative B, in all allotments that were not meeting the biodiversity standard, are analyzed below.

The Brundage Creek allotment is within close proximity to a lek complex and is known to support winter populations of sage grouse and maintaining adequate sagebrush cover is very crucial. Current management was providing for adequate sage grouse habitat, so maintaining the current management and implementing allowable use levels should maintain habitat conditions.

In the Fish Creek allotment, implementing allowable use levels and changing the season of use would allow for deferred use on one half of the allotment every year and should allow for residual herbaceous cover for sage grouse during the nesting season and fall/winter big game use.

In the Passmore SGC allotment, fencing, authorizing 15 days of use/rest on alternating years, and implementing allowable use levels should be sufficient to improve upland conditions.

Under Alternative B, Price Creek would have 6 miles of new fence construction of which ½ mile would be let-down fence to minimize conflicts during elk migrations. Much of the proposed fencing would replace temporary electric fencing that has been used in previous years. This would allow for better livestock management and reduce site specific concerns. Additional fencing could create more barriers to wildlife movements, however, fencing would be 3 wire division fences built to specifications outlined in Section 2.3.3, to minimize wildlife conflicts. Previous management has been effective in improving conditions on the allotment so continuation of the grazing management should be adequate to support existing wildlife uses.

The proposed forest health treatments include 1276 acres of sagebrush habitat, much of which is summer habitat for sage grouse and is used for elk calving. This would equate to a loss of 4% of existing available big sagebrush habitat with greater than 5% canopy cover on BLM-administered lands within the watershed, if all of it is consumed during prescribed burn operations. Prescribed burns would result in a short term loss (20 yrs) of this sagebrush habitat but in the long term would facilitate the BLM's goals and objectives of maintaining and improving the sagebrush/grassland habitat. The loss of sagebrush to conifer forests is a net loss of sagebrush habitat, which is in direct conflict with the *Management Plan and Conservation Strategies for Sage Grouse in Montana.* Treatments would target conifer expansion into sagebrush habitat with emphasis on maintaining the mature sagebrush component within the treatment units. This would help ensure that 70% or more of the potential big sagebrush communities would provide the composition and structure capable of supporting sagebrush obligate species. Units outside of the WSA may be treated mechanically with chainsaws to facilitate burning objectives, which would cause some localized and short term wildlife displacement during activities.

Resource Concern #1 - T & E Species and Migration Corridors:
Treatment Units N1 and N2 would greatly reduce the cover available to wild ungulates and black bears on the north side of the valley. These islands have significant wildlife use and removal of this cover could reduce the current use they are receiving. However, they most likely existed as more open Douglas-fir savannah habitat and stand density has increased due to the exclusion of fire. During treatment implementation, wildlife would be displaced onto neighboring Forest Service forested habitat to the north due to the lack of any nearby forested cover on BLM-administered lands.

Treatment Units Cor1 and Cor2 could also remove crucial security cover along the elk migration corridor. These stands provide the last security cover available before they break out into the Centennial Valley. This area receives disproportionate use during spring and fall migrations and is especially important during fall big game hunting seasons. However, elk management objectives in this elk management unit have been below harvest objectives and the antlerless elk season was extended two weeks last fall to meet harvest objectives. Moderate intensity burning could improve forage conditions surrounding the stands without totally removing them.

The center of timber harvest activity would focus on the Price Creek area. No treatments would take place in more than two adjacent 6th code HUC's at one time, thus allowing adjacent HUC's to be undisturbed and act as a sanctuary for displaced wildlife during implementation. Units PC1 and PC2 are not currently providing foraging habitat for snowshoe hares, although they are providing habitat for red squirrels, an alternate prey source for lynx. The selective removal would allow for continued support of red squirrel and stimulate growth of lodgepole saplings, providing for snowshoe habitat in the future. Unit PC4 is adjacent to a harvest unit from the 1980's that is currently providing adequate snowshoe hare habitat and would continue to provide foraging habitat after the project completion.

Unit BC4 is currently providing marginal habitat for lynx, therefore no impacts to lynx would be associated with harvest activities. This unit is primarily dry Douglas-fir with some interspersed aspen. This unit would be targeted to increase aspen regeneration, which would improve foraging in the future. Activities would utilize existing roads but there would be some displacement of other wildlife uses during implementation, and security cover would be reduced along a travel corridor. Unit BC5 would require one mile of new temporary road under conventional harvest and is targeted to restore a Douglas-fir savannah habitat. This is potential lynx habitat consisting of approximately 80 acres of cool moist Douglas-fir and 20 acres of dry Douglas-fir habitat type. This habitat would most likely be unsuitable for foraging habitat; however denning habitat could be enhanced during implementation. Unit BC6 is 31 acres of lodgepole and Douglas-fir mixed habitat type. Removal would be by helicopter to help facilitate the prescribed burns. No road construction is associated with this unit and disturbance would be short term during implementation. Removal of the existing canopy cover and creating a fuel break could fragment the existing surrounding foraging and denning habitat, but as lodgepole regenerate in this stand the foraging habitat would be enhanced.

Unit PC7 is a post and pole permit area that would remain active for ten years. This unit is 10 acres of lodgepole pine. This is a mixed age stand that is currently providing habitat for snowshoe hares. This stand would be considered unsuitable for lynx foraging following post and pole cutting and is included in the unsuitable acres calculated under Alt B in Table 15.

Existing roads that are opened one at a time for up to 2 years post-treatment for public firewood availability would have locally confined impacts. Temporary project roads would represent a short-term site specific increase in road density until they are reclaimed, and may create some wildlife displacement during implementation. This alternative has the greatest amount of temporary road use, and would therefore have the greatest short-term disturbance and displacement to wildlife. Seasonal closures on roads would be lifted for timber harvest operations, which has the potential to increase disturbance during spring migrations and elk calving season.

Recreational use would continue to increase and road density within the potential habitat would remain below the 1 mile/sq mile recommended under the GBRP. Temporary road use would increase from .67 mi/mi^2 to .73 mi/mi^2 during project implementation for timber removal under conventional methods, and .70 mi/mi^2 if the helicopter method is implemented (see Table 14). The activity is somewhat localized, so impacts from temporary road disturbance could create localized displacement during implementation if the habitat is occupied. No temporary roads would be opened for implementation of prescribed fire treatments. Whitebark pine treatments through the use of prescribed fire would improve habitat along the Continental Divide in this area. The use of prescribed fire in the WSA could cause seasonal displacement during implementation if the habitat is occupied, but the treatments would improve existing foraging habitat. Reducing the threat of high intensity wildfires would be beneficial and all activities associated with prescribed burn operations would be short in duration and have minimal impacts.

Security cover needs were taken into consideration for lynx, grizzly and large ungulates during planning. The size and shape of harvest units would be designed to minimize distance to cover and create irregular edges and buffer zones would be used to maintain screening cover from existing roads. This is consistent with the GBRP and the LCAS. Furthermore, the GBRP recognizes that this population is not essential to reach recovery bear population objectives. The Yellowstone Grizzly Bear Ecosystem grizzly bear population has consistently met most of the Recovery Plan criteria for recovery the past 5 years.

Managing riparian habitats to improve habitat and move toward proper functioning conditions as well as the restoration of aspen stands would increase diversity of riparian vegetation and prey availability for gray wolves lynx, grizzly bears and other large carnivores. Implementing grazing management with 50% browse guidelines should allow regeneration of aspen clones, however ungulate use post livestock grazing is expected to create localized increase in use and 50% guideline may not be sufficient in localized areas. All proposed forest health treatments are consistent with the LCAS and should improve foraging and denning habitat for potential lynx occupancy when completed.

Livestock management and permitted numbers would not increase and no new sheep allotments would be permitted. Implementing grazing management guidelines should improve shrub steppe habitat and be maintained for mid seral or higher conditions. The exception to this would be within the prescribed burn units that will set back some of the shrub steppe forested matrix back to an early seral stage. Livestock use would be deferred two years post treatment to allow for establishment of shrub and herbaceous vegetation; however this may not be sufficient for establishment of aspen clones. The proposed treatments were planned to be large enough to allow for dispersed across the landscape so that browsing by domestic and wild ungulates is not concentrated within small treatments and exacerbate the problem with declining aspen. Leaving the larger woody component on the ground in the aspen units, to discourage ungulate browsing of saplings should also help to get aspen clones re-established.

Resource Concern #2 - Cultural Resources:
Any direct impacts from any newly proposed range improvement or vegetation treatment projects under this alternative would be avoided through project redesign or abandonment. Proposed changes in grazing management to meet the Standards of Rangeland Health would be expected to benefit and improve conditions at approximately 20% of the previously recorded cultural properties (see discussion in Section 3.2.5). The indirect impact of decreasing hazardous fuel loads and improving forest health, would be to decrease the potential of catastrophic natural fire. Prevention of catastrophic fire events, would ultimately aid in the long term protection of important cultural resource values.

Resource Concern #3 - Air Quality:
The potential for smoke generated from slash burning and other prescribed fire treatments would be the greatest under this alternative. The potential for smoke from wildfires would be the lowest under this alternative. Conformance with the Montana Idaho Smoke Management stipulations as well as further daily airshed clearance stipulations would keep these emissions within airshed permit limitations. However, there may be some short-term impairment to the class one airshed of the Centennial Valley.

Resource Concern #4 - Socioeconomics:
It is estimated that up to 12,000,000 board feet of timber would be harvested in this alternative. Depending upon the yarding method, the potential stumpage revenue could vary from $600,000 (helicopter) to as high as $2,400,000 (ground-based). Indirect monetary benefits could be as high as ten times these stumpage values.

The commercial fuelwood contract in Unit PC 3 would be the first such opportunity in over 23 years for local firewood providers. Also, there have not been any post/pole opportunities in live lodgepole pine stands on public lands in the Centennial Valley since 1985. This would be the first opportunity for the local community to obtain forest products from public lands in the Centennial Valley in over 20 years. In response to input from local citizens, the BLM is attempting to provide minor forest products in several areas throughout the Dillon Field Office.

Areas may be closed to recreation within the vicinity of active prescribed fires. Localized, temporary closures may negatively impact hunting concessions and support services for a short time.

Shortened authorized use periods on the several allotments (eg. Antelope Peak, Monida Hill, Fish Creek, Ritchie, Brundage Bridge, Brundage Creek, Passmore SGC) would necessitate using private pastures or other areas for longer periods. During years that Brundage Bridge Riparian Pasture, Ritchie and Passmore SGC are rested, alternate pasture would be necessary and would increase costs. Additional range improvement projects would add increased construction and maintenance expenses for the permittees and the BLM. Authorized AUMs would remain the same as under Alternative A, however, use guidelines in the uplands and riparian areas may necessitate increased labor inputs by the permittees in order to harvest authorized AUMs. In drier years, total authorized AUMs may not be available for harvest. To implement prescribed burn treatments, pastures or allotments would need to be rested from livestock grazing, generally one year prior to, and two growing seasons following the prescribed burn. This would necessitate finding alternate pasture for up to three years.

See Table 9 in Chapter 2 for comparison of changes on each allotment by alternative.

Resource Concern #5 - Recreational Impacts/Access and Off Road Use:
Impacts to recreation from Alternative B are potentially the greatest of the three alternatives. The short and long term impacts to recreational use of the Centennial Mountains could vary greatly depending on the timing of the proposed harvest and prescribed burning activities. If all of the proposed activities were to occur in within a short period of time (3-5 years) it would probably displace hundreds – even thousands of days of public recreational use from the Centennial Mountains. If management activities are implemented in a way that avoids concentrating burn and harvest activities both physically and temporally, recreational use would more likely move from one area of the Centennial Mountains to another, especially as it pertains to elk hunting.

The Bean Creek and Price-Peet areas are among the most heavily used areas in the Centennial Mountains for elk hunting, and are the location of the majority of the other forest health treatments proposed under this alternative. Salvage harvest and prescribed burning activity in those areas could temporarily displace campers, especially during the big game hunting season when camping use levels are at their highest. However in some cases, clearing or thinning of forested areas may actually increase the overall availability of campsites. Depending on the time of the harvest activity, it could also displace elk and other big game which could affect recreational use of that area. In the Price-Peet area, up to 10 established campsites could be rendered undesirable for future camping for up to 15-20 years by changing the aesthetic attraction of the surrounding forest. The Bean Creek area also contains numerous public campsites during the elk hunting season, with low to moderate use throughout the warm seasons. Proposed harvest activities could temporarily displace recreational users in the Bean Creek area by modifying the aesthetic attraction of the trees and the wildlife cover provided for elk, deer, and moose, and creating additional temporary roads undesirable to recreationists seeking the more primitive recreational experiences currently provided in this area. These same activities may actually create opportunities for additional motorized access and less primitive experiences, however the proposed RMP prescribes management of this area to promote primitive and semi-primitive non-motorized recreation opportunities.

Commercial recreation operations are likely to be affected by proposed activities in the Shambow Creek area (burn unit LV1) and the Hell Roaring Creek area (burn unit HR1). There is one commercial outfitter base camp in the area of Shambow Creek which is used regularly during the big game hunting season, and periodically for commercial summer horseback activity. Another commercial outfitter base camp in Odell Creek (on ARS lands) could be affected by prescribed burning activities near Lakeview if access to that camp is disrupted. The Hell Roaring Creek area contains a commercial outfitter's camp for backcountry skiing, and is the point of access for another commercial outfitter camp on ARS lands which is used for both summer horseback and big game hunting operations. Over the short term, the commercial outfitting camps in Shambow and Hell Roaring Creeks would most likely not be viable during burning activities. Depending on how the burn behaves in the site-specific location of the camp, the aesthetic qualities of these camp locations could be changed for the foreseeable future, and possibly rendered undesirable.

Non-commercial public recreation in the areas of these burn activities is also likely to be affected. Recreational use of the Continental Divide National Scenic Trail in the area of Hell Roaring Creek could be affected in the short term by burn activities and resultant burned areas. The Odell Creek and Shambow Creek drainages also receives moderate levels of public recreational use nearly year-round which could be affected by activities proposed under this alternative.

In the long term, the aesthetics would be improved through the reintroduction of aspen and more natural mixed-age stands of forest and the proposed activities could enhance the wildlife habitat and improve hunting opportunities. Motorized access in the area would not likely change if temporary roads are adequately closed upon termination of harvest operations. If whitebark pine stands are increased, it could increase the numbers of grizzly bears in the area and provide additional viewing opportunities of this species, as well as encounters.

Resource Concern #6 - Wilderness Characteristics:
Short term impacts to wilderness characteristics would also be the greatest under Alternative B due to the level of management activities proposed. Opportunities for solitude would be adversely impacted during the times when prescribed burn-related activities were taking place. Use of chainsaws to perform any mechanical pre-thinning prior to prescribed burning would likely be considered the minimum tool necessary for that job, and would impair wilderness visitors' opportunities for solitude and primitive

experiences for the duration of those operations. From the time the mechanical treatment is completed until the time the burn is completed, there would be activity apparent in those areas in the form of cut stumps and slash piles. Upon completion of the actual burning activity, many of these impacts would become unnoticeable, at least for the majority of wilderness visitors. These activities would also influence wildlife activities and opportunities for wildlife viewing during the time of the activity.

In the long term, prescribed fires would return the Centennial Mountains WSA to a more natural vegetative community and restore more natural processes to the area. Management ignited prescribed fires proposed under this alternative would create greater opportunities for future natural ignitions to be managed within prescription, reducing the potential for impacts associated with fire suppression activities, and increasing the natural role of fire in this area. As the role of fire returned to a more natural state, other natural processes (i.e. – wildlife movement, vegetation communities, successional processes, etc.) in the area would be restored as well

Resource Concern #7 - Visual Resources:

Objectives for VRM Classes are described in Chapter 1, Section 1.4.4 under Resource Concern #7, Visual Resources. The effects of Alternative B to Visual Resources are summarized in the following table:

Table 16. Summary of Effects to Visual Resources

Treatment Area	VRM Class	Dominant Landscape Features	Effects to Visual Resources
Price-Peet and Corral Creek (Units Cor1, Cor2, PC1, PC2, PC3, PC4, PC5, PC6, and PC7)	Class III	Coarse visual texture – rolling hills dissected by drainages and intermittently vegetated by trees and shrubs. Timbered portions of the area range in color from juniper green to largo red, sagebrush dominated portions are a mix of shale green, brush brown and sand beige	Short term implementation (5 years or less): may not be consistent with VRM objectives
			Long term implementation: consistent with VRM objectives
Unit BC1	Mostly Class II, Class I in the WSA	Steep, heavily timbered slopes	Consistent with VRM objectives
Unit BC2	Class III	Lightly timbered slopes	Consistent with VRM objectives
Unit BC3	Class II outside the WSA, Class I in the WSA	Lightly timbered slopes	Consistent with VRM objectives
Unit BC4	Class III	Steep, heavily timbered slopes	May not be consistent with VRM objectives
Unit BC5	Class II	Steep, heavily timbered slopes	May not be consistent with VRM objectives
Unit BC6	Class II	Steep, heavily timbered slopes	Consistent with VRM objectives

Treatment Area	VRM Class	Dominant Landscape Features	Effects to Visual Resources
Unit Curry1	Class II	Aspen stands with conifer competition	Consistent with VRM objectives
Unit LV1	Mostly Class I, Class II outside of WSA	Steep, heavily timbered slopes dissected by Shambow Creek, Odell Creek, and at least three other steep drainages.	Consistent with VRM objectives
Unit LV2	Class II	Similar to LV1	Consistent with VRM objectives
Unit HR1	Mostly Class I, Class II outside of WSA	Coarse visual texture – heavily timbered with historical clearcuts in the foreground which create some variation and contrast with the older stands of timber	Consistent with VRM objectives
North side of Valley (Units N1, N2, SD1, SD2, and SD3)	Class III	Vast open landscape	Consistent with VRM objectives

Forest health treatments between Corral Creek and the Price-Peet Divide under Alternative B constitute over half of the timbered acres within this area. If these actions are performed in a relatively short period of time (5 years or less), the short term impacts to visual resources would be quite dramatic, changing the color and texture of the existing visual landscape quite noticeably to the casual observer from most key observation points along the Centennial Valley Road or the Price-Peet Road. If conventional logging practices are used in conjunction with the harvest activities, it would increase the changes to the line elements by introducing linear features to the viewshed. If new temporary roads were routed with visual resource concerns in mind, they could be somewhat obscured from key observation points by making use of the rolling hills topography. Helicopter logging would substantially reduce the changes to existing line elements under this alternative. If vegetation management activities in this area are conducted over a longer period of time, changes to the visual landscape will be more subtle, allowing time for regeneration of some timber stands, making smaller scale changes to the existing color and texture elements, and allowing for replacement of some of those elements prior to making additional changes.

Treatments proposed in the Bean Creek area cross from VRM Class III on the lower end through VRM Class II moving upslope, and into VRM Class I within the WSA. In Units BC2 and BC3, changes to color and texture along these slopes would be moderate to slight with the proposed prescribed burning activity. Most of this activity would be obscured from key observation points along the county road to the north, and would not attract attention from points within the Bean Creek drainage. Unit BC5 is the largest harvest unit in this area, and contains 1 mile of proposed temporary roads. Although this area is mostly not visible from key observation points along the county road, it will be visible from most points within the Bean Creek drainage itself, including points within the WSA. Construction of temporary roads would introduce a linear feature not prevalent in the existing landscape. Although Bean Creek currently has 6 cutting units with over 3.5 miles of associated roads, these linear features are currently obscured by nearly 40 years of re-growth. Unit BC4 to the north would not require road construction, but would also be evident over the short term from points within the Bean Creek drainage.

In Unit BC1, only the north aspects of slopes and the higher elevations near the continental divide would be visible from key observation points along the county road. In Unit LV1, the multiple steep drainages dissecting this area will serve to limit the amount of total acreage visible from any key observation point along the county road. Unit HR1 is in an area that is mostly steep slopes up to the continental divide, cut by a few north-south trending drainages (primarily Corral Creek and Hell Roaring Creek). The majority of Unit HR1 is visible from the county road due to the steep north-facing slopes. Prescribed fires in these units would most likely occur only under such conditions that the entire stand would not be burned, but rather stringers up the drainages, leaving large patches of timber within the boundary of the burn unit. Under these conditions, the changes to the characteristic landscape would most likely not attract the attention of the casual observer, and would mimic "natural ecological change" which could be allowed even within the VRM Class I area.

The salvage operation proposed in Curry Creek is approximately ½ - 1 mile from the county road. The proposed operation would remove conifer competition from within 90 acres of an aspen stand, and any merchantable timber would be helicopter yarded to an existing road in the area. Because the existing aspen stand would remain, trees would be selectively cut and removed, and no roads would be constructed, the impacts to the visual features of the landscape would be minimal. There would be virtually no noticeable change to the landscape features of texture and line. Minor changes to the existing color would be most noticeable during the fall when the aspen trees are characteristically yellow and white, and the competing conifers are green. This salvage operation would remove patches of green from within the surrounding predominantly yellow and white.

Unit LV2 is in the foothills of the mountains less than 1 mile from the county road through Lakeview. No new roads would be constructed for this harvest activity. Mechanical treatment would feather the visual effects of the ski run directly adjacent to the WSA.

The proposed activities on the north side of the valley might attract attention, but would not dominate the view of the casual observer.

Resource Concern #8 – Protection of Private Property from Wildland Fire:
Wildland fire suppression would continue in accordance with the Dillon Field Office Fire Management Plan for areas outside of the Centennial Mountains WSA. Prescribed burning as a follow-up treatment in mechanical harvest units, in combination with prescribed burn treatments in strategically located non-mechanically treated units would create areas where wildland fire would likely be restricted due to lack of fuel, or burn through with minimal intensity and severity. Preparatory mechanical and prescribed burn treatments would decrease the potential for a wildland fire to burn out of the WSA and to

threaten private property.

Mechanical treatment of Unit LV2 would provide some measure of defensible space for that facility.

4.2.4 Predicted Effects of Alternative C

Issue #1 - Forest and Woodland Health:

Mechanical treatments would increase the flexibility and control of prescribed fire treatments. In Units PC1, PC2 and PC4, commercial harvest treatments would provide fuel breaks to facilitate prescribed burning. A portion of the control line below the steeper sections of the Price-Peet Road may be non-commercially thinned to avoid potential resource conflicts involved with utilizing conventional equipment.

The amount of aspen proposed for restoration treatment is less than in Alternative B. Pre-treatment within these aspen stands by mechanically cutting but not removing conifers would create some browse barriers and increase aspen regeneration response. No commercial product removal would occur in these aspen stands and the potential increase in aspen regeneration from conventional harvest operations would not occur.

The removal of forest products would be decreased by 60% or more compared to Alternative B. The application of prescribed fire would create more variable disturbance effects than an applied silvicultural prescription as proposed in Alternative B, which would have more precise control of disturbance effects. Prescribed fire effects could vary from light underburning of needle cast, grasses, forbs and small woody debris in an extremely variable mosaic, to minor flare ups of small to medium size trees resulting in patches of mortality from less than one acre to several acres. Flare ups would most likely occur in areas of recent dead lodgepole pine and subalpine fir, or where ladder fuels extend into the canopy. Fire behavior would be influenced by the random changes in topography, weather, fuel sizes, exposures and fuel moisture. Due to the variability in treatment results, the historic density, structure, and species composition may not be restored in some areas. This alternative would be less effective in increasing stand resiliency to insects and disease than Alternative B, but more effective than Alternative A.

The openings generated by prescribed fire would provide regeneration opportunities for lodgepole pine, Engelmann spruce and Douglas-fir. These openings would also contribute to increased snow deposition.

Expected effects to special status plant species in forest and woodland habitats would be similar to Alternative B, but over a substantially smaller area.

Disturbance created by prescribed burning allows increased potential for noxious and invasive plants. However, standard operating procedure is to inventory and treat for noxious weeds prior to and for several years following these treatments.

Issue #2 - Riparian, Wetland and Aquatic Habitat and Associated Species:
Management changes associated with revisions to AMPs in Alternative C are similar to Alternative B and would result in improvements to riparian vegetation, stream channel morphology and sediment transport.

In the Fish Creek Allotment, an alternating rest system rather than a deferred rotation would allow for better livestock distribution and management and faster riparian (stream bank and vegetation) and fishery habitat improvement than Alternative B, but would also require constructing approximately 3½ miles of fence through an elk calving range and migration corridor which may create conflicts with seasonal movements.

In the Monida Hill Allotment, the shortened duration of use in each unit would allow a quicker response in riparian/wetland conditions, but would involve up to 4 miles of fence, which could have the potential to impede wildlife movements or cause mortalities.

In the Passmore SGC Allotment, the system would still be 15 days of use followed by complete rest the next year. Under Alternative C, however, the season of use is in June rather than September. Although both seasons of use are expected to substantially improve riparian conditions in a relatively short time frame, the June use would allow a quicker vegetative (sedge) response and a slower improvement to streambank stability. This season of use may allow more compaction due to wetter conditions in June. By implementing 4" sedge stubble height guideline, conditions should improve, but not as rapidly as they would under fall use. If any special status riparian or wetland plants occur in this area, the June use would be more impacting or less beneficial for these plants.

Impacts to wildlife would be similar to Alternative B above for all other allotments.

Prescribed fire would affect distribution of livestock within pastures. If the burns are located away from riparian areas, effects to riparian areas would be beneficial because the burned areas would draw the livestock away from riparian zones. If the burns are located adjacent to riparian areas, more livestock use would occur in these areas. This effect would be lessened by allowing two years of growing season rest after the burns. This same effect is true of wild ungulates.

There is expected to be about the same overall effect to WCT habitat in Price Creek and Bean Creek due to a decrease in mechanical vegetation treatments and an increase in prescribed burning within the drainages.

The effects of livestock management on fishery habitat would be similar to those expected under Alternative B. Fishery habitat needs would be met under this alternative.

The same number of crossings is associated with this alternative as in Alternative B. Because appropriate State and Federal Permits would be obtained, permit conditions would be followed and culverts would be removed at project completion, impacts on stream hydrology and water quality would be minimal.

The risk of wildfire and extreme fire effects would be more than Alternative B, but less than Alternative A.

Issue #3 - Upland Health, Upland Habitat and Associated Species:
Expected effects of Alternative C on uplands would be similar to Alternative B. Watershed-wide, all use would be deferred until June 1 or later depending on the allotment and the resource concerns that were identified. The exception is Custodial allotments that consist of mostly private lands. Deferring use and implementing rest rotation grazing systems should improve habitat conditions. Impacts to wildlife habitat from grazing systems, fence modifications and water developments would be the same as Alternative B in all other allotments and is addressed in Section 4.2.2. Expected effects to special status plant species would be similar to Alternative B.

In the Fish Creek allotment, impacts would be the same as Alternative B except for the construction of three miles of fence which would add another barrier to wildlife movement.

In the Monida Hill and Pharalope East allotments, the allowable use levels and rest rotation would improve habitat conditions slightly quicker than Alternative B. Shortening the grazing season of use would reduce flexibility in management which in turn may not be as conducive to improving overall habitat conditions. Construction of 4.5 miles of fence would create more barriers to wildlife.

In the Passmore SGC allotment, impacts would be similar to Alternative B with exception to the changed season of use, which would allow for wetter soils during the permitted grazing season and could result in increased compaction.

The risk of high severity wildfire to forested habitats would be reduced in this alternative. High severity burns would be smaller, and fewer acres would be expected to convert from forested habitat to bare ground. The potential for severe erosion would be less than Alternative A, and similar to Alternative B.

There would be less new temporary roads constructed in this alternative than in Alternative B. Because Best Management Practices would be incorporated, sediment movement and erosion would be minimal. The potential for sediment movement associated with roadwork would be less than Alternative B.

Prescribed burns would improve distribution of livestock within the pastures they are located. Prescribed burns could result in adverse soil effects in small areas where soil moisture is lacking or there are concentrations of large fuel.

The proposed forest health treatments include 1048 acres of sagebrush habitat, the majority of which is in the Sand Dunes prescribed burn units. This is approximately 3% of the existing sagebrush habitat in the watershed with a canopy cover of 5% or greater. This would equate to a loss of less than 2% of existing available sagebrush habitat on BLM-administered lands. The units outside of the WSA may be treated mechanically with chainsaws to facilitate burning activities. Prescribed burns would result in a short term loss (20 yrs) of this sagebrush habitat but in the long term would facilitate the BLM's goals and objectives of maintaining and improving the sage/grassland habitat.

Resource Concern #1 - T & E Species and Migration Corridors:
Under this alternative, fewer acres would be treated and the time of disturbance associated with the activities would be reduced compared to Alternative B. Security cover issues in the Price Creek drainage, and road density and design features would be the same as addressed in Alternative B. Less timber harvest treatments would be implemented, but most units identified for treatment under Alternative B in the Price Creek area would be treated with prescribed fire. Implementing these burns would remove slash and target aspen clones to promote suckering. The overall displacement impacts to wildlife would be reduced and localized on the south west end of the watershed in the Centennial Mountains. The road open road density would not be dramatically increased during implementation (see Table 14). Seasonal road closures would be lifted during harvest operations and all temporary roads would be subject to closure or obliteration 2 years post implementation, so there would be no net increase in open roads following the operational period. This would not fragment the existing habitat to a large extent across the mountain range and impacts would be less than Alternative B.

Recreational and livestock impacts would be similar to Alternative B. Fewer fuels treatments designed to rejuvenate aspen clones would be implemented, therefore less foraging habitat would be enhanced than in Alternative B. This would decrease the potential impacts to grizzly bears during implementation by decreased open road density and reduced impacts associated with human disturbance, especially in the eastern portion of the analysis area. Approximately 4.5% of the potential lynx habitat in the watershed would be considered unsuitable for the next 15 years under Alternative C (see Table 15).

Resource Concern #2 - Cultural Resources:
Any direct impacts from any newly proposed range improvement or vegetation treatment projects under this alternative would be avoided through project redesign or abandonment. Proposed changes in grazing management to meet the Standards of Rangeland Health would be expected to benefit and improve conditions at approximately 20% of the previously recorded cultural properties (see discussion in Section 3.2.5). Of more limited scale and scope than Alternative B, the indirect impact of decreasing hazardous fuel loads and improving forest health under this alternative would a decreased potential for catastrophic natural fire. Prevention of catastrophic fire events, would ultimately aid in the long term protection of important cultural resource values.

Resource Concern #3 - Air Quality:
Smoke emission potential for prescribed burns is the greatest under this alternative. Smoke emission potential from wildfire would be less than Alternative A and more than Alternative B.

Resource Concern #4 - Socioeconomics:
Up to 500,000 board feet could result from this treatment. Depending upon the yarding method, the potential stumpage revenue could vary from $25,000 (helicopter) to as high as $100,000 (ground-based). Indirect monetary benefits to the regional economy could be as high as ten times these stumpage values.

In this alternative, the sale of forest products would be forfeited from areas where their utilization has been an important aspect of management opportunities. The loss of this revenue would reduce potential funding of future forest management projects in the Dillon Field Office. This alternative would provide no opportunities for public post and pole removal, and fewer opportunities for public firewood removal than Alternative B.

Socioeconomic impacts to the livestock operators under this alternative would be similar to Alternative B. Shortened authorized use periods on the several allotments (e.g. Monida Hill, Fish Creek, and Passmore SGC) would necessitate using private pastures or other areas for longer periods. During years that the Passmore SGC Allotment is rested, an alternate pasture would be necessary which would increase costs. Additional range improvement projects would add increased construction and maintenance expenses for the permittees and the BLM, specifically within the Fish Creek and Monida Hill Allotments. Authorized AUMs would remain the same as under Alternative A, however, use guidelines in the uplands and riparian areas may necessitate increased labor inputs by the permittees in order to harvest authorized AUMs. In drier years, total authorized AUMs may not be available to harvest. To implement prescribed burn treatments, pastures or allotments would need to be rested from livestock grazing, generally one year prior to, and two growing seasons following the prescribed burn. This would necessitate finding alternate pasture for up to three years.

Resource Concern #5 - Recreational Impacts/Access and Off Road Use:
The short and long term impacts to recreational use of the Centennial Mountains could vary greatly depending on the timing of the proposed harvest and prescribed burning activities. The time frame for implementation of vegetation management activity under Alternative C is less critical than under Alternative B because large, heavily used areas in Bean Creek and Hell Roaring Creek are not proposed to be treated under Alternative C. These areas would offer short term refuge for recreationists to relocate to, even if activities in Price Creek and around Lakeview were conducted within a relatively short time frame. Therefore, fewer recreational users would be displaced entirely from the Centennial Mountains, although crowding would increase around Bean Creek and Hell Roaring Creek over the short term. If management activities are implemented in a way that avoids concentrating burn and harvest activities both physically and temporally, recreational use would more likely move from one area of the Centennial Mountains to another, especially as it pertains to elk hunting.

Commercial recreation operations are likely to be affected by proposed activities in the Shambow Creek area (burn unit LV1). Another commercial outfitter base camp in Odell Creek (on ARS lands) could be affected by prescribed burning activities near Lakeview if access to that camp is disrupted. Over the short term, the commercial outfitting camp in

Shambow Creek would most likely not be viable during burning activities. Depending on how the burn behaves in the site-specific location of the camp, the aesthetic qualities of the camp location could be changed for the foreseeable future, and possibly rendered undesirable. The Odell Creek and Shambow Creek drainages also receive moderate levels of public recreational use nearly year-round which could be affected by activities proposed under this alternative.

Numerous private-party camps are established in the area of the Price-Peet Road which could also be affected by the extent of prescribed fire and harvest activities in that area. These camps are used each year by the general public primarily during the elk hunting season, but periodically from the middle of May through the end of the year. Dramatic changes to the aesthetic qualities of these campsites could displace these users for the foreseeable future.

Over the long term, the proposed activities could enhance the wildlife habitat and improve hunting opportunities. Motorized access in the area would not likely change if temporary roads are adequately closed upon termination of harvest operations. If whitebark pine stands are increased, it could increase the numbers of grizzly bears in the area and provide additional viewing opportunities of this species, as well as encounters.

Resource Concern #6 - Wilderness Characteristics:
Short term impacts to wilderness characteristics would be less under this alternative than under Alternative B. These impacts would be limited to the far western portion of the WSA near Price Creek and the middle portion near Lakeview. In these two areas, opportunities for solitude would be adversely impacted during the times when prescribed burn-related activities were taking place. Use of chainsaws to perform any mechanical pre-thinning prior to prescribed burning would likely be considered the minimum tool necessary for that job, and would impair wilderness visitors' opportunities for solitude and primitive experiences for the duration of those operations. From the time the mechanical treatment is completed until the time the burn is completed, there would be relatively widespread impacts of man's activity apparent in those areas in the form of cut stumps and slash piles. Upon completion of the actual burning activity, many of these impacts would become unnoticeable, at least for the majority of wilderness visitors. These activities would also influence wildlife activities and opportunities for wildlife viewing during the time of the activity.

In the long term, prescribed fires would return the Centennial Mountains WSA to a more natural vegetative community and restore more natural processes to the area. Management ignited prescribed fires proposed under this alternative would create greater opportunities for future natural ignitions to be managed within prescription, reducing the potential for impacts associated with fire suppression activities, and increasing the natural role of fire in this area. The likelihood of natural fires starting that could be considered "within prescription" according to the Wildland Fire Use Plan would be less under this alternative than under Alternative B because fuel loading would remain a limiting factor to allowing fires to burn within prescription. As a result, the potential for fire suppression impacts to continue to impact the WSA would be greater under this alternative than under Alternative B. As the role of fire returned to a more natural state, other natural processes (i.e. – wildlife movement, vegetation communities, successional processes, etc.) in the area would be restored as well

Resource Concern #7 - Visual Resources:
Visual impacts in this area would be the same as under Alternative B except that there would be no forest health treatments in Corral Creek, Bean Creek, and Units N1 and N2. The differences in visual impacts to the Corral Creek area would be very minimal since these two units combined account for less than 15% of the treatment acreage in this area, and do not command the attention of the casual observer from any of the key observation points.

If vegetation management activities in this area are conducted over an extended period of time (10-15 years), changes to the visual landscape would be more subtle, allowing time for regeneration of some timber stands, making smaller scale changes to the existing color and texture elements, and allowing for replacement of some of those elements prior to making additional changes.

Proposed actions in this alternative may not be consistent with management of the area for VRM Class III objectives if the actions are conducted in a short time frame as the level of change would probably exceed "moderate." These same actions conducted over an extended period of time would likely be consistent with management of this area under a VRM Class III.

Resource Concern #8 – Protection of Private Property from Wildland Fire:
Wildland fire suppression would continue in accordance with the Dillon Field Office Fire Management Plan for areas outside of the Centennial Mountains WSA. Limited mechanical harvest treatments would occur to facilitate subsequent prescribed burn treatments. Upon completion, prescribed burn treatments would create areas a wildland fire would likely be restricted from due to lack of fuel, or burn through with minimal intensity and severity. Preparatory mechanical treatments and prescribed burn treatments would decrease the potential for a wildland fire to burn out of the WSA and to threaten private property. However, the limited application of mechanical treatments to facilitate prescribed burning would require forfeiting some degree of control in the resulting appearance of the treatment units and in the effectiveness of the treatment in reducing the intensity and severity of a potential wildland fire burning through treatment areas.

4.3 Cumulative Effects for All Alternatives

Cumulative effects are those that result from adding the anticipated direct and indirect effects of the proposed action, to impacts from other past, present and reasonably foreseeable future actions. These additional impacts are considered regardless of what agency or person undertakes such actions. The cumulative impacts area for this EA is defined as the entire Centennial Valley and any adjacent continuous habitats. The Centennial Assessment Report contains historical information that is applicable to this section. Also, some past, present and reasonably foreseeable actions are discussed in Chapter 3 (Affected Environment) and/or Chapter 2 (Features Common to all

Alternatives).

These effects or actions are common to all alternatives:
Historical Events

- Severe over-trapping of beavers and unregulated livestock use during the late 1800s and early 1900s changed the character (hydrologically and vegetatively) of most mountain streams in the Intermountain West. (Elmore and Kaufman, 1999). Although there are still active beaver colonies in the Centennial Watershed, beaver activity is substantially reduced from historical levels.
- Construction of Lima Reservoir to meet downstream irrigation needs at the turn of the twentieth century has influenced the hydrologic regime of the upper Centennial Valley by the reduction of flow gradients and perching of the water table. Fluctuating water levels continue to cause uncontrolled bank erosion, add to sediment loading, and limit the riparian vegetative site potential around the reservoir margin. Construction of the reservoir and subsequent bank erosion has adversely impacted, and continues to adversely impact, numerous significant cultural and paleontological resources.
- Exclusion of fire from the landscape (e.g. removal of fine fuels by the introduction of livestock grazing into the watershed in the late 1800s and the levels of livestock grazing prior to passage of the Taylor Grazing Act, coupled with fire suppression over the past century), has resulted in the unnatural increase in the accumulation of fuel loads and reduced forest health.
- Watershed-wide under all management schemes on all land ownerships, there has been a decline in aspen. This is a west wide phenomenon that can be attributed primarily to a combination of successional processes including reduction (or elimination) of fire and long-term overuse by ungulates (Bartos and Campbell, 1998).

Past Management and Current Use Trends

- There has been timber harvest, pole cutting, Christmas tree cutting, and fire wood collecting in the past within the watershed. There was approximately 1,100 acres of timber harvested on all ownerships within the watershed since the 1980s. There is currently one fire salvage timber harvest project under contract on 136 acres of BLM in the vicinity of Curry Creek. These timber harvest projects may have caused a short term increase in soil erosion and sedimentation depending on slope, soil type, and proximity to streams.
- During the recent past and currently, there are no other “conifer encroachment” or fuels treatments within the watershed.
- U.S. Interstate 15 was identified as a barrier to grizzly bear migration and movements into other recovery zones in the GBRP. It also impedes large ungulate migrations and causes mortalities, but is outside the control of BLM management.
- In the past, Jurisdictional Determinations have not usually been sought from the United States Army Corps of Engineers, federal permits have not always been obtained for water gaps or hardened crossings, and neither State nor Federal permits and have been obtained for spring developments. It is likely that many

springs have no flow and no longer have hydrology, hydric soils or hydric vegetation. 318 Authorizations for Short Term Water Quality Standards for Turbidity have not usually been sought, and water rights have not been always been obtained for springs, diversions or points of use. Wetland mitigation and wetland enhancement have not been addressed in accordance with the national "no net loss" of wetlands policy.

- Increased recreation and recreational development has impacted some riparian areas as well as upland areas (increased roads and trails, spreading of weed seed, etc). Recreation is expected to continue to increase within the Centennial Valley, especially during the hunting season.
- Irrigation practices with private water rights may have an additive impact to riparian and/or aquatic health.
- Additive impacts to WCT populations include competition, hybridization, sedimentation from all sources and de-watering by irrigation diversions. Other factors listed in this section that impact riparian health would also impact WCT habitat in applicable streams.
- Sagebrush control treatments were completed on public lands within the Fish Creek Allotment during the 1960s. Sagebrush has re-occupied these sites. The USFS has completed some prescribed burn treatments near the Fish Creek Allotment in the 1980's. Some of the private landowners have treated sagebrush with prescribed burns during the past ten years. Several of the private landowners in the watershed are interested in treating sagebrush with prescribed fire or Spike (tebuthiron). This is a reasonably foreseeable future action on private land.
- The current drought cycle and fluctuations in local weather impact all of the issues addressed in this EA.
- The economic situation of the permittees is effected by changes in cattle prices, hay prices, fuel prices, interest rates, land prices, labor costs, labor inputs, equipment costs, equipment maintenance costs, facilities maintenance costs, costs of feed supplements, irrigation costs, availability of irrigation water, private land lease rates, veterinary costs, calf crop survival, livestock loss, local weather and other miscellaneous factors. Changes in regulations, policy or management direction of other land management agencies, specifically the USFS or MT DNRC may have socioeconomic impacts to livestock operators in the watershed.

Anticipated Future Actions

- Potential future harvest operations may occur on up to 300 acres of Montana Department of State lands in the Corral Creek drainage, up to 200 acres in the Bean Creek drainage and 170 acres in the northeast portion of the Centennial Valley. The sales in Corral Creek and in the northeast portion of the valley are not in the immediate vicinity of any planned BLM harvest treatments. The Targhee National Forest will salvage harvest 205 acres approximately 4 air miles south of the continental divide.
- Approximately 80 acres of private land adjacent to Unit PC2 may be harvested in conjunction with BLM Alternative B or C. If this occurs, it will be coordinated with BLM harvest activity and associated road use. The transportation of privately owned timber may require installation of a crossing on Price Creek

within these private lands. As with any BLM activity, this would be subject and in conformance with State of Montana SMZ Laws and Rules. If the private landowners and the BLM mutually agree, the BLM may use this transportation route for the removal of timber from Unit PC2 in return for the use of BLM roads by the private landowner. This change would decrease the amount of new temporary road by approximately 1 mile and would be addressed in the Decision Record. Other harvest activity may occur on 200 acres of private lands in northeast portion of the Centennial Valley.
- Additional sagebrush treatments are expected on adjacent private lands.

4.3.1 Cumulative Effects of Alternative A – No Action (Continuation of Current Management)

Beyond the effects discussed in Section 4.2.1, Alternative A would increase the potential of wildfire to move from BLM to adjacent ownerships in the area. The effects previously discussed will also continue on adjacent forested lands until either a natural or human caused disturbance occurs.

The continuation of aggressive wildfire suppression outside of the WSA will decrease the effectiveness of suppression efforts over time. Growing fuel accumulations will promote higher intensity and severity wildfires, therefore increasing the cost and complexity of wildfire suppression/rehabilitation. New residential and commercial structures built in the wildland-urban interface will be increasingly threatened by wildfire and will require additional risk from firefighting personnel to protect from wildfire.

This alternative has the potential for resulting in the most cumulative adverse impacts to cultural resources. Failing to address forest health issues has a higher probability of resulting in catastrophic fire which would destroy significant cultural resource values. In addition, noted impacts from existing grazing management would be expected to continue with the cumulative effect being the additional loss of significant cultural resource values.

Additive impacts to socioeconomics would occur in the event of a catastrophic wildfire, which is most likely under Alternative A. Livestock permittees would be impacted by having to find alternative pasture with little or no planning time and for at least two years. Local individuals and small logging businesses would be directly impacted by the loss of opportunity for wood products. Local revenue related to recreation would be impacted for the short term, specifically if the wildfire occurred during the late summer or fall (hunting season). If no wildfire occurs, additive socioeconomic impacts would not be expected under Alternative A.

Air Quality is expected to remain within standards. Potential impacts to human health resulting from wildfire will remain.

The implementation of a Wildland Fire Use Plan within the WSA will compliment wildland fire use by the Targhee National Forest on the Idaho portion of the Centennial Mountains. A larger area will allow greater flexibility in wildland fire use management and promote interagency cooperation to accomplish common resource management objectives.

Conifer expansion into sagebrush steppe habitat would be expected to continue. This would continue to decrease the forage to cover ratio on a landscape level and reduce the "edge" for wildlife use. This would also increase the chance for more intense wildfires in sagebrush steppe habitat which would increase the potential for noxious and invasive weed establishment and soil erosion.

A continuation of current water and land use practices from private, state and other federal agencies will continue to affect riparian vegetation, stream channel morphology, sediment transport and fish habitat within the planning area. Livestock grazing, timber harvest and/or recreational impacts on lands upstream from BLM could continue to be a concern due to sediment and water quality issues which influence stream conditions and the quality of fish habitat on fish bearing streams downstream from the source.

Barrier fences would continue to represent barriers to wildlife movement and cause collision and entanglement hazards.

Timber harvest operations on adjoining State Lands in Bean Creek and Corral Creek will increase the miles of road in the area, increasing opportunities for motorized vehicle access into the area over the short term and influencing changes in the characteristic linear features in some of these landscapes. These roads will most likely be identified for closure following harvest activities, and motorized vehicle access will be returned to approximately current levels. Harvest activities on State Lands are focused on providing revenue for Montana schools. Changes to texture and form may also be evident outcomes of this activity over the landscape. Evidence of this activity will also be more of a long-term feature of the landscape.

Additive effects to wilderness characteristics, other than those described above would not be expected under Alternative A.

4.3.2 Cumulative Effects of Alternatives B

Beyond the effects discussed in Section 4.2.2, this alternative would be the most proactive in creating fuel conditions on treated lands that decreases the potential for wildfire spread from BLM lands to adjacent ownerships. Management actions to reduce hazardous fuels and restore forest ecosystem functions will have a long-term positive impact on the protection of private property from wildland fire. However, there is the potential for fires being managed to accomplish resource objectives or prescribed fires to threaten private property. Wildland fire that threatens private property will be managed as an emergency situation and all reasonable efforts will be made by wildland fire managers to ensure property protection.

Non-permanent private property permitted to be on public lands (i.e. hunting camps) may be threatened by wildland fire. Reasonable written notice and precautions will be taken by the BLM to ensure the protection of this property.

All direct impacts to cultural resource values from the proposed actions in Alternative B will be avoided through project redesign or abandonment. The long term cumulative effects of Alternative B will to create conditions that will foster the long term preservation and protection of cultural resource values from the adverse impacts of catastrophic fire events, while similarly enhancing the riparian and upland vegetative conditions which will also assist in the protection and preservation of cultural resource values. The use of prescribed fire does come with certain risks to adjacent standing historic structures. During the preparation of every associated burn plan, care and special attention will be given to the protection of and standing historical structures that may occur within or adjacent to the proposed burn units in order to minimize the risk of inadvertent damage to the historical properties.

Air Quality would remain within standards. Potential impacts to human health from wildfire will continue. Burn Plans will continue to be implemented to address human health concerns associated with prescribed burning.

Reducing conifer expansion in sagebrush steppe areas would improve diversity on a landscape level. It would increase the forage to cover ratio and create more “edge” for wildlife. Timber harvest operations on adjacent property (State Trust and Private) could limit potential for habitation by grizzly bears, lynx and other large carnivores and reduce security cover for large ungulates, depending on the type of practices and design features that are incorporated to mitigate habitat alterations.

Roads utilized in this alternative and subsequently rehabilitated or closed are subject to future temporary re-opening as required by administrative use of the BLM, other agency and/or private land access needs.

Impacts resulting from grazing, timber harvest and/or recreation on private and State Lands, not subject to BLM Land Standards will continue. Impacts from grazing and timber harvest subject to Forest Service regulations will continue. This could impact wildlife migration and dispersal between Montana and Idaho depending on timber harvests planned on State, private and National Forests in the future. Any reductions in AUMs available from BLM lands on an annual basis would increase grazing use on private or state land within the watershed if herd numbers stay the same.

Managing for larger, more productive cool season grasses by changing the frequency, timing, duration and/or intensity of livestock grazing on specific allotments would leave more cover and forage for wildlife species and may slightly change patterns of use in specific areas within the watershed. Additional off-site watering locations would better disperse ungulate use in specific areas within the watershed.

Modifying, replacing, or removing barrier fences would mitigate the presence of barriers and collision/entanglement hazards watershed-wide.

No additive or cumulative effects are expected for special status plants under this alternative.

Socioeconomic impacts to livestock operators, in addition to those discussed above are not expected.

The cumulative effects for recreation, wilderness, and visual resources of future actions on private, state, or other federal lands would be similar to the effects discussed in Section 4.2.2. The nature and scale of these activities would vary according to the objectives of the landowners or administrators.

4.3.3 Cumulative Effects of Alternatives C

Beyond the effects discussed in Section 4.2.3, this alternative would be more proactive than Alternative A and less than Alternative B in creating fuel conditions on treated lands that decreases the potential for wildfire spread from BLM lands to adjacent ownerships in the Price Creek area.

Anticipated cumulative effects to cultural resources, upland health and protection of private property from wildland fire are essentially the same as those noted in Alternative B.

Air Quality will remain within standards. Potential impacts to human health from wildfire will continue. Burn Plans will continue to be implemented to address human health concerns associated with prescribed burning.

As with Alternative B, all roads utilized in this alternative and subsequently rehabilitated or closed are subject to future temporary re-opening as required by administrative use of the BLM, other agency and/or private land access needs.

Impacts resulting from grazing and timber harvest on private and State Lands, not subject to BLM Land Standards will continue. Impacts from grazing and timber harvest subject to Forest regulations will continue. These may or may not be sufficient to provide adequate un-fragmented habitat and security cover for habitation by grizzly bears, lynx and other large carnivores and ungulates.

Additive socioeconomic impacts to livestock operators are not expected as a result of Alternative C.

The cumulative effects for recreation, wilderness, and visual resources of future actions on private, state, or other federal lands would be similar to the effects discussed in Section 4.2.3. The nature and scale of these activities would vary according to the objectives of the landowners or administrators.

5.0 List of Preparers - Consultation/Coordination

5.1 List of Preparers

Steve Armiger	Hydrologist
Laurie Blinn	GIS Specialist
Kipper Blotkamp	Fuels Management Specialist
Kelly Bockting	Wildlife Biologist
Joe Casey	Forester
Pat Fosse	Supervisory Rangeland Management Specialist
Brian Hockett	Rangeland Management Specialist – Special Status Plants
Bart Howells	Rangeland Management Specialist
Paul Hutchinson	Fisheries Biologist
Kandace Kulish	GIS Specialist
Paul Lenmark	Fuels Management Specialist
Aly Piwowar	Forester
Mark Sant	Archaeologist/Cultural Resources
John Simons	Rangeland Management Specialist
Rick Waldrup	Outdoor Recreation Planner

5.2 Consultation/Coordination

5.2.1 Persons and Agencies Consulted

John Anderson (Ruby Dell Ranch)	Permittee
Francis Auld	Confederated Salish and Kootenai Tribes
Katie Baltrusch	BLM Planning and Environmental Specialist
Liz Bradley, Bob Brannon, Pat Clancy, Dick Oswald	Montana Fish, Wildlife and Parks
Jim Brammer	Beaverhead-Deerlodge National Forest (Dillon)
Amy Chadwick	Private Consultant
Steve Cooper, Paul Hendricks	Montana Natural Heritage Program
David Cronenwett	Montana Wilderness Association
Kim Davitt	American Wildlands
Katrina Dixon, Randy Gazda, Bob Rebarchik	US Fish and Wildlife Service
Mark Goeden	BLM Assistant Field Manager
Art Hall	Beaverhead-Deerlodge National Forest (Sheridan)
Bill Hensley	BLM Forester
Steve Hess	Permittee
Huntsman Ranch	Permittee
J Bar L Ranch	Permittee
Quinn Jacobsen	Agricultural Research Service (Sheep Station)

Shane Kleusner	Private land manager
Nathan Korb	The Nature Conservancy
Huey Long	BLM Soil Scientist
Chuck Maddox, Gary Moore	Montana DNRC
Matador Ranch	Permittee
Pat McKenna	Private landowner/manager
Mel Montgomery	Centennial Outfitters
Mike Mooney	BLM Range Technician - Weeds
James Munday	Permittee
Bill Nickleson	Private landowner
Mike Parker, Jeff Warren	Red Rock Lakes National Wildlife Refuge
Mike Philbin	BLM Hydrologist
Robert Ray	Montana DEQ
Jim Roscoe	BLM Wildlife Biologist
Volker and Lois Saier	Permittee
Jerry Schied	Private landowner
David Schuett	Permittee
Ann Simonsen	Permittee
Stibal Ranch	Permittee
Kevin, Mike, and Ted Stosich	Private landowner
Mike Strang	Lima Resource Team
John Taft	Private landowner
Targhee National Forest	
Arthur Thompson	Permittee
Eugene Walsh	Permittee

5.2.2 Notifications

Quarterly Project List – January 2004, September 2004
Mailing List for Centennial Watershed Assessment
Media Release in Southwest Montana – May 2004

5.2.3 Statement of Public Interest

Several individuals and groups have expressed interest in this proposed action. The mailing list of individuals and groups who have expressed interest to date is available at the Dillon Field Office.

GLOSSARY OF TERMS

actual use: a report of the actual livestock grazing use certified to be accurate by the permittee of lessee. Actual use may be expressed in terms of animal months or animal months.

allotment: An area of land designated and managed for grazing livestock.

allotment management plan (AMP): a documented program which applies to livestock grazing on the public lands, prepared by consulting, cooperating, and coordinating with the permittee(s), lessee(s), or other interested publics.

analysis: (1) a detailed examination of anything complex in order to understand its nature or determine its essential features; or (2) a separating or breaking up of any whole into its component parts for the purpose of examining their nature, function, relationship, etc. A rangeland analysis includes an examination of both biotic (plants, animals, etc.) and abiotic (soils, topography, etc.) attributes of the rangeland.

animal unit month(AUM): the amount of dry forage required by one animal unit for one month, based on a forage allowance of 26 pounds per day.

apparent trend: an assessment, using professional judgment, based on a one-time observation. It includes consideration of such factors as plant vigor, abundance of seedlings and young plants, accumulation or lack of plant residues on the soil surface, and soil surface characteristics (i.e., crusting, gravel pavement, and sheet or rill erosion).

basal area: the cross-sectional area (in square feet at diameter at breast height) of all tree stems, expressed on a per-acre basis; a measurement used to express stand density.

base acres: forestlands where commercial timber harvest activities are determined to be environmentally and economically suitable and available for the continuous production of timber under the existing Management Framework Plan or the Proposed Resource Management Plan.

biomass: all vegetative materials grown in forest, woodland, or rangeland environments that are the by-products of management, restoration, or fuel reduction treatments (historically non-utilized or under-utilized material). This term usually refers to such material that can be gathered and transported to cogeneration plants, and utilized for the production of energy.

browse: (1) the part of shrubs, half shrubs, woody vines, and trees available for animal consumption; or (2) to search for or consume browse.

browse plant or browse species: a shrub, half shrub, woody vine, or tree capable of producing shoot, twig, and leaf growth suitable for animal consumption.

burn boss: The person directly responsible for implementing a prescribed fire.

canopy cover: the percentage of ground covered by a vertical projection of the outermost perimeter of the natural spread of foliage of plants. Small openings within the canopy are included. Canopy cover is synonymous with crown cover.

community: an assemblage of populations and/or animals in a common spatial arrangement.

cool season species: plants whose major growth occurs during the late fall, winter and early spring.

evaluation: (1) an examination and judgment concerning the worth, quality, significance, amount, degree, or condition of something; or (2) the systematic process for determining the effectiveness of on-the-ground management actions and assessing progress toward meeting objectives.

forage: (1) browse and herbage which is available and can provide food for animals or be harvested for feeding; or (2) to search for or consume forage.

forb: (1) any herbaceous plant other than those in the Gramineae (true grasses), Cyperaceae (sedges), and Juncaceae (rushes) families—i.e., any non-grass-like plant having little or no woody material on it; or (2) a broadleaved flowering plant whose above ground stem does not become woody and persistent.

functional at risk (FAR): Riparian wetland areas that are functional, but an existing soil, water, or vegetation attribute makes them susceptible to degradation.

goal: the desired state or condition that a resource management policy or program is designed to achieve. A goal is usually not quantifiable and may not have a specific date by which it is to be completed. Goals are the base from which objectives are developed. (See objective)

grazing System: A systematic sequence of use and non use of an allotment.

herbaceous: vegetation growth with little or no weedy component; non-woody vegetation such as graminoids and forbs.

historical range of variation (HRV): The "HRV" concept refers to the expected variation in physical and biological conditions caused by natural climatic fluctuations and disturbance regimes (i.e. flooding, fire and windthrow). HRV is derived from an ecological history of the landscape and is estimated from the rate and extent of change in selected physical and biological variables. For example, in the Douglas-fir forest, HRV was determined by looking at existing fire scar evidence which indicated one to several fire events during the life of the older to oldest trees. The relatively uniform age groups of younger trees found in the direct vicinity of older fire scarred trees that have seeded in and grown since the last major historical fire disturbance event(s) also indicate a lack of fire in recent history.

interested public: An individual, group or organization that has submitted a written request to the authorizing officer to be provided an opportunity to be involved in the decision making process for the management of livestock grazing on specific grazing allotments, or has submitted written comments to the authorized officer regarding the management of livestock grazing on a specific allotment.

interpretation: explaining or telling the meaning of something and presenting it in understandable terms.

inventory: the systematic acquisition and analysis of information needed to describe, characterize, or quantify resources for land-use planning and management or the public lands.

key area: "Key areas are indicator areas that are able to reflect what is happening on a larger area as a result of on-the-ground management actions. A key area should be a representative sample of a larger stratum, such as a pasture, grazing allotment, wildlife habitat area, herd management area, etc., depending on the management objectives being addressed by the study…."

line officer: The manager of a defined portion of public land. For example, the Dillon Field Manager is the Authorized Officer or line manager for the public lands administered by the Dillon Field Office.

monitoring: the orderly collection, analysis, and interpretation of resource data to evaluate progress toward meeting objectives.

objective: planned results to be achieved within a stated time period. Objectives are subordinate to goals, are narrower in scope and shorter in range, and have increased possibility of attainment. The time periods for completion, ant the outputs or achievements that are measurable and quantifiable, are specified. (See goal)

pasture: a grazing area enclosed and separated from other areas by a fence or natural barrier.

proper functioning condition (PFC): A riparian-wetland area is considered to be in proper functioning condition when adequate vegetation, landform, or large woody debris is present to:

- Dissipate stream energy associated with high waterflow, thereby reducing erosion and improving water quality;
- Filter sediment, capture bedload, and aid floodplain development;
- Improve flood-water retention and ground-water recharge;

- Develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses;
- Support greater biodiversity

public lands: any land interest in land outside of Alaska owned by the United States and administered by the Secretary of the Interior through the Bureau of Land Management (see 43 CFR 41000.0-5)

riparian zone: the banks and adjacent areas of water bodies, water coursed, seeps, and springs whose waters provide soil moisture sufficiently in excess of that otherwise available locally so as to provide a moister habitat than that of contiguous flood plains and uplands.

salvage harvest: the cutting and removal of dead or dying timber resources.

sanitation harvest: the cutting and removal of diseased trees or trees damaged by stress or mechanical agents such insects or wind.

seral stage: the developmental stages of an ecological succession; synonymous with successional stage.

shrub: a plant that has persistent woody stems and a relatively low growth habit, and that generally produces several basal shoots instead of a single bole. It differs from a tree by its low stature—less than 5 meters (16 feet)—and non-arborescent form.

shrubland: land on which the vegetation is dominated by shrubs. Non-forested lands are classified as shrubland if shrubs provide more than 20 percent of the canopy cover, excluding trees. Lands not presently shrubland that were originally or could become shrubland through natural succession may be classified as potential natural shrubland.

succession: the orderly process of community change; it is the sequence of communities that replace one another in a given area.

thin from below: a method of thinning in which stand density is reduced by harvesting trees in the lower diameter classes.

trend: the direction of change in ecological status or in resource value ratings observed over time. Trend in ecological status is described as "toward" or "away from" the potential natural community or as "not apparent." Appropriate terms are used to describe trends in resource value ratings. Trends in resource value ratings for several uses on the same site at a given time may be in different directions, and there is no necessary correlation between trends in resource value ratings and the trend in ecological status.

understory: plants growing beneath the canopy of other plants; usually refers to grasses, forbs, and low shrubs under a tree or shrub canopy.

use guideline: (1) a degree of utilization of current year's growth which , if continued, will achieve objectives and maintain or improve the long-term productivity of the site; or (2) the percentage of a plant that is utilized when the rangeland as a whole is properly utilized. This use level can vary with time and systems of grazing.

utilization: the proportion or degree of the current year's forage production by weight that is consumed or destroyed by animals (including insects). The term may refer either to a single plant species, a group of species, or the vegetation community as a whole. Utilization is synonymous with use.

vigor: relates to the relative robustness of a plant in comparison to other individuals of the same species. It is reflected primarily by the size of a plant and its parts in relation to its age and the environment in which it is growing.

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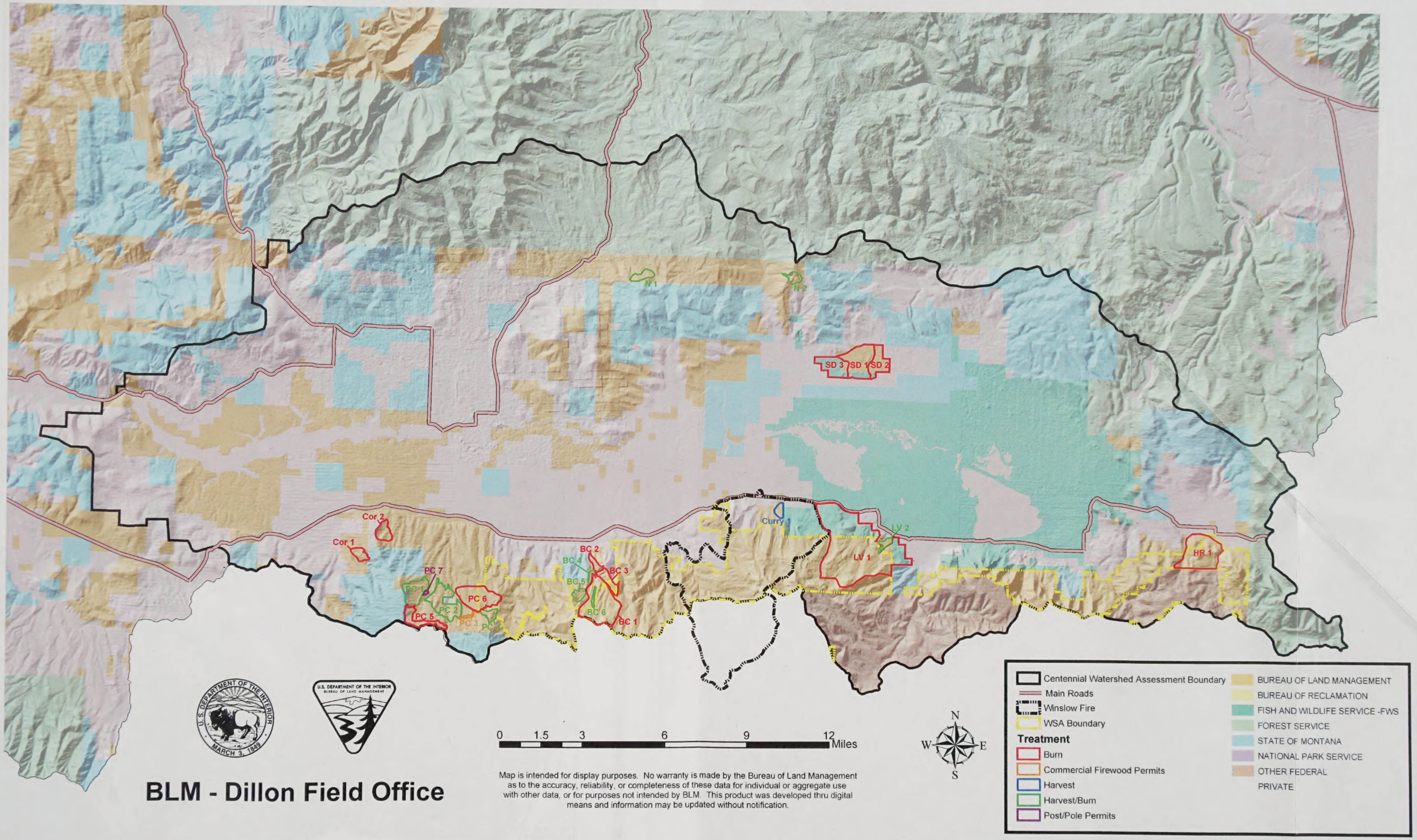
Appendix A

List of Maps

Forestry/Fuels Alternatives
Forestry/Fuels Units Alternative B
Price Creek Timber Treatment Units – Alternative B Conventional
Price Creek Timber Treatment Units – Alternative B Helicopter
Bean Creek Timber Treatment Units – Alternative B Conventional
Forestry/Fuels Units Alternative C
Price Creek Timber Treatment Units – Alternative C Conventional
Price Creek Timber Treatment Units – Alternative C Helicopter

Livestock Grazing Alternatives
Fish Creek – Alternatives B & C
Phalarope East and Monida Hill – Alternative B
Phalarope East and Monida Hill – Alternative C
Oxbow – Alternative B
Price Creek South – Alternative B
Price Creek North – Alternative B
Brundage Bridge and Brundage Creek – Alternative B
Lima Reservoir – Alternative B
Munday East, Munday Reservoir, and Mud Lake Field – Alternative B
Saier Individual – Alternative B
Sand Dunes and Windmill – Alternative B
Ritchie SGC – Alternative B
Cook Sheep Camp, Morton Individual, and Tom Creek – Alternative B

Centennial Watershed EA - Alternative B Forestry/Fuels Units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PC 6
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PC 5
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PC 4
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BC 4
BC 3
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BC 6
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Centennial Watershed Assessment Boundary
Main Roads
Winslow Fire
WSA Boundary
Treatment
Burn
Commercial Firewood Permits
Harvest
Harvest/Burn
Post/Pole Permits
BUREAU OF LAND MANAGEMENT
BUREAU OF RECLAMATION
FISH AND WILDLIFE SERVICE -FWS
FOREST SERVICE
STATE OF MONTANA
NATIONAL PARK SERVICE
OTHER FEDERAL
PRIVATE

BLM - Dillon Field Office

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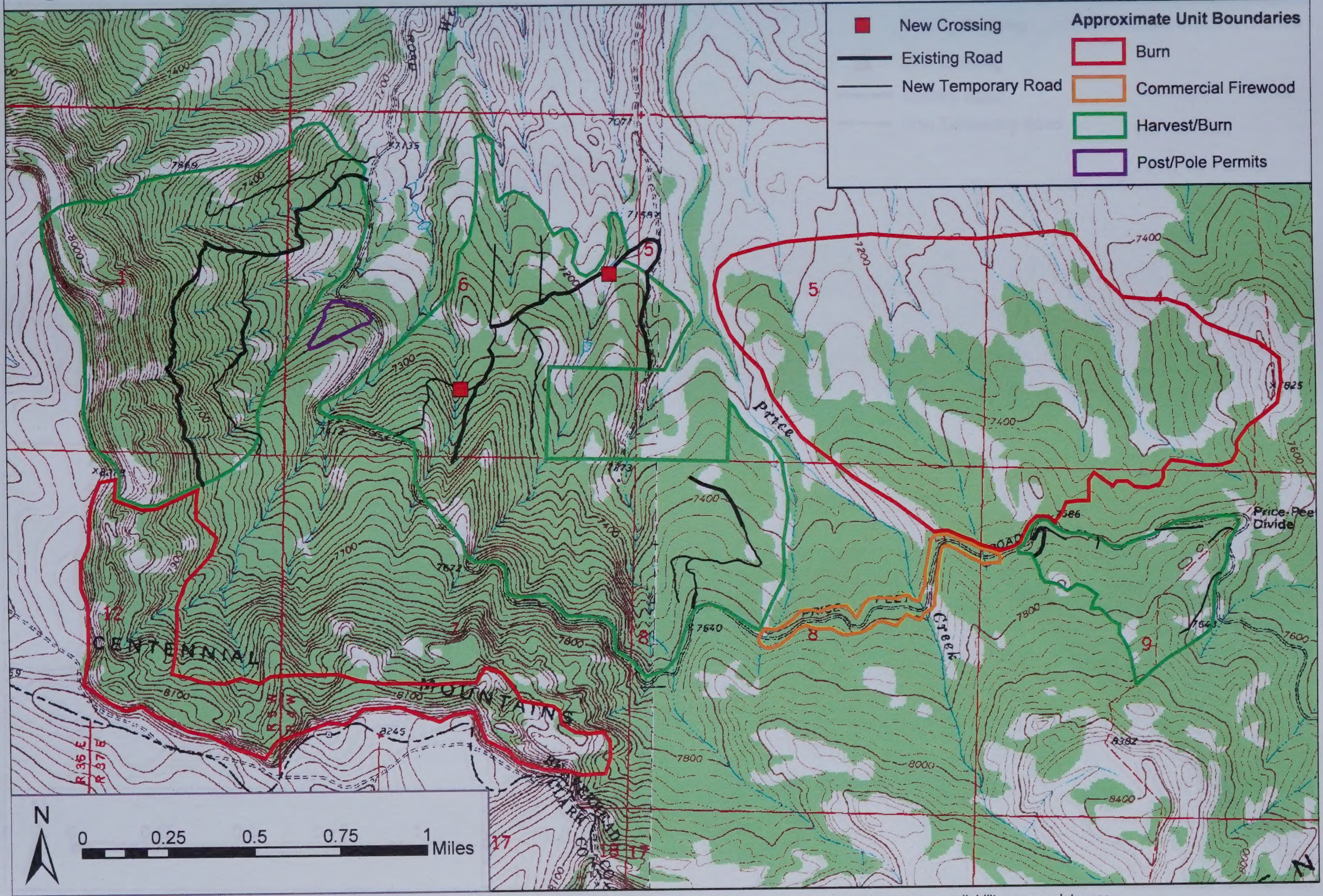
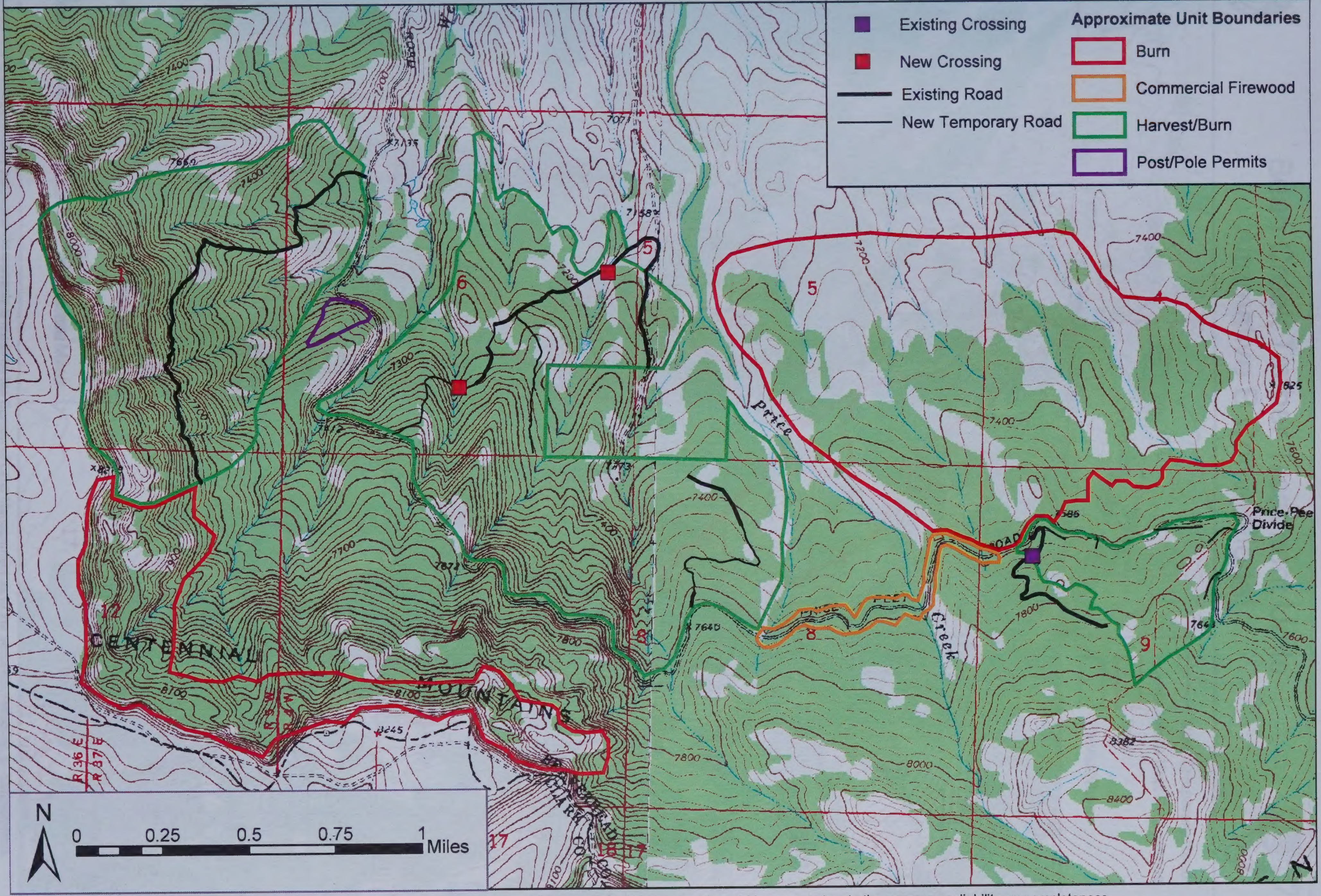
Price Creek Timber Treatment Units - Alternative B Conventional


New Crossing
Existing Road
New Temporary Road
Approximate Unit Boundaries
Burn
Commercial Firewood
Harvest/Burn
Post/Pole Permits
Price
Creek
Price-Pee Divide
CENTENNIAL
MOUNTAINS
R 36 E
R 37 E
1
4
5
6
7
8
9
12
15
17
18
7135
7869
7400
8000
7300
7200
7071
7158
7700
7673
7800
7640
7586
7825
7600
8100
8245
8382
8400
7773
N
0
0.25
0.5
0.75
1
Miles

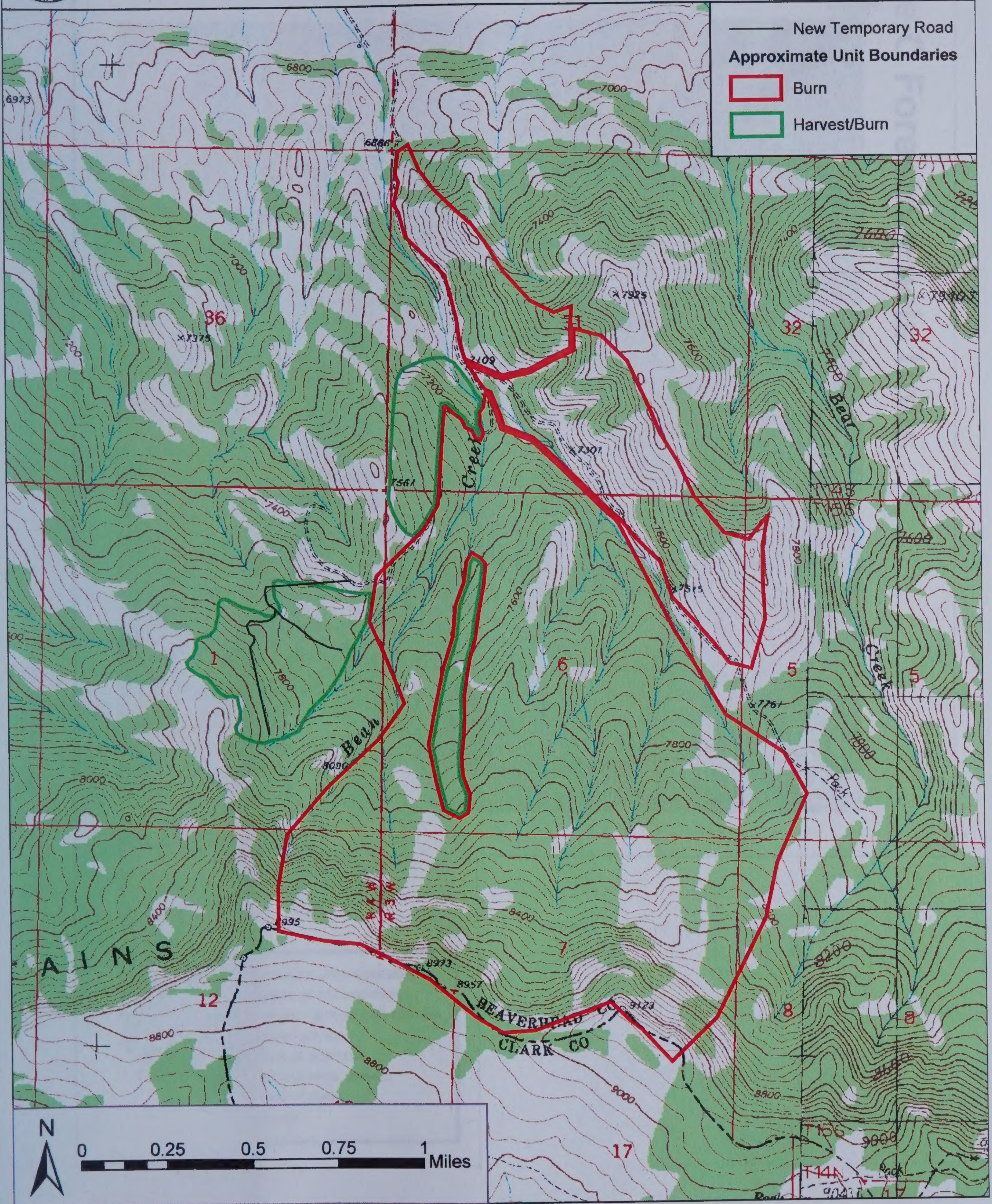
This map is intended for display purposes. No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data or for purposes not intended by BLM. Road locations are approximate.

Price Creek Timber Treatment Units - Alternative B Helicopter


Existing Crossing
New Crossing
Existing Road
New Temporary Road
Approximate Unit Boundaries
Burn
Commercial Firewood
Harvest/Burn
Post/Pole Permits
Price Creek
Price-Pee Divide
CENTENNIAL MOUNTAINS
1
5
6
7
8
9
12
17
18
R 36 E
R 37 E
N
0
0.25
0.5
0.75
1
Miles

This map is intended for display purposes. No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data or for purposes not intended by BLM. Road locations are approximate.

Bean Creek Timber Treatment Units
Alternative B Conventional


New Temporary Road
Approximate Unit Boundaries
🟥 Burn
🟩 Harvest/Burn
36
32
32
1
6
5
5
7
8
8
12
17
Bean
Creek
Bear
Creek
Pack
BEAVERHEAD CO
CLARK CO
AINS
6800
7000
7200
7300
7400
7600
7800
8000
8200
8400
8800
9000
6973
6886
7109
7375
7925
7301
7561
7515
7761
8090
8935
8973
8957
9123
T14S
T15S
T14N
T15N
R10W
R9W
N
0
0.25
0.5
0.75
1
Miles

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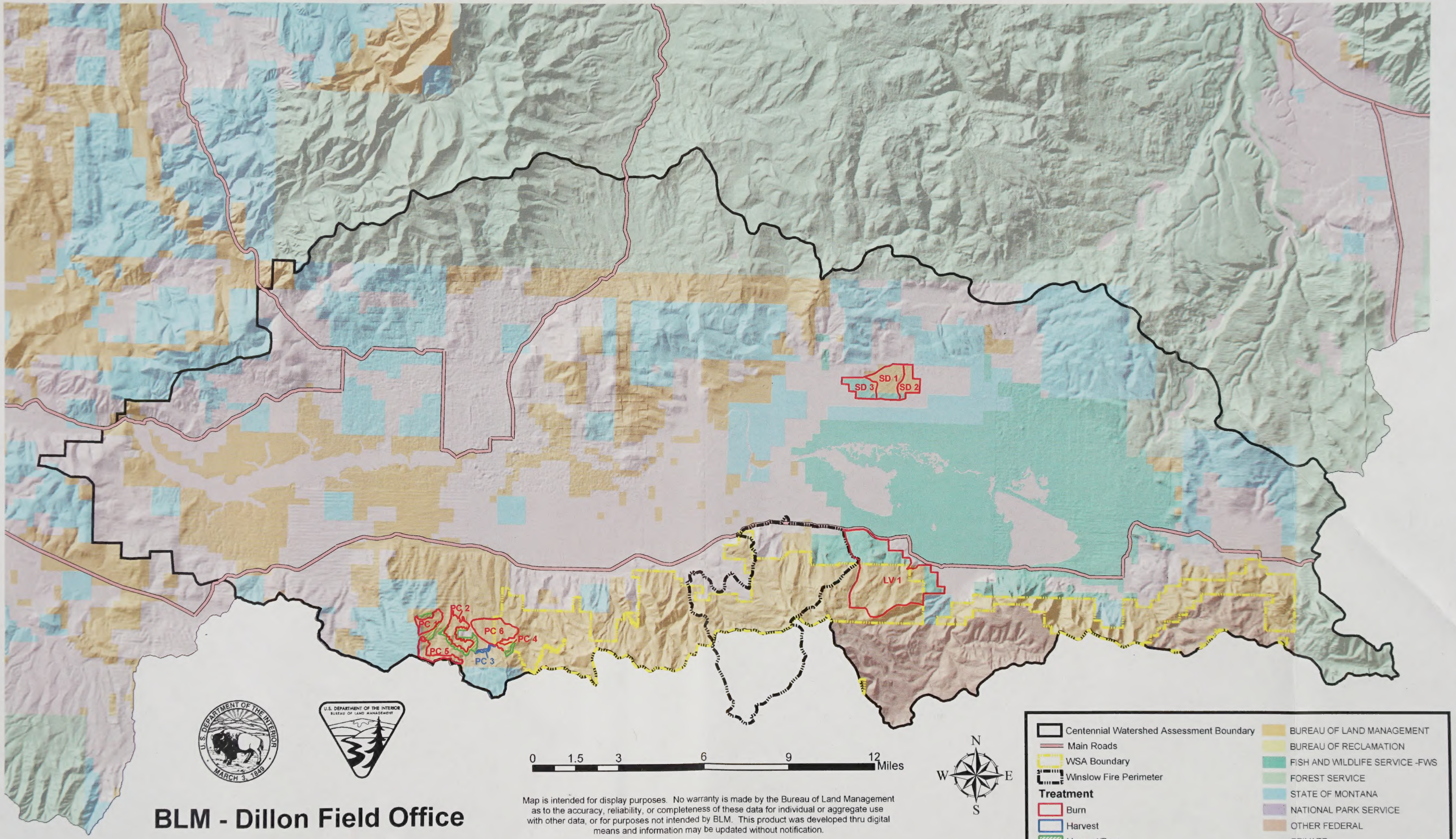
Centennial Watershed EA - Alternative C Forestry/Fuels Units



- ▭ Centennial Watershed Assessment Boundary
- ━ Main Roads
- ▭ WSA Boundary
- ▭ Winslow Fire Perimeter

Treatment

- 🟥 Burn
- 🟦 Harvest
- ▨ Harvest/Burn

- BUREAU OF LAND MANAGEMENT
- BUREAU OF RECLAMATION
- FISH AND WILDLIFE SERVICE -FWS
- FOREST SERVICE
- STATE OF MONTANA
- NATIONAL PARK SERVICE
- OTHER FEDERAL
- PRIVATE

BLM - Dillon Field Office

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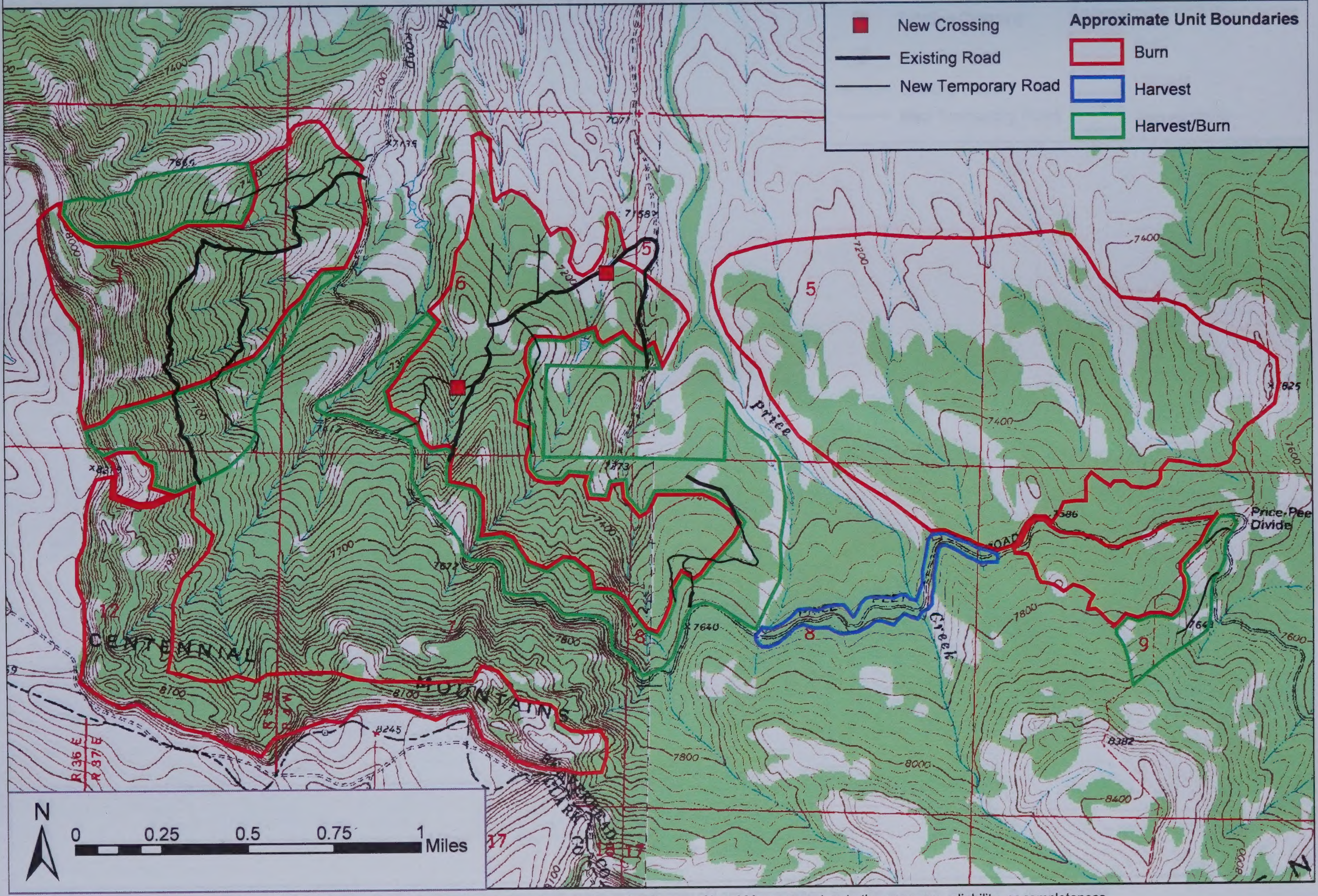
I:/wtrshd_anlys/centennial/Centennial_forestry&fuels_units_AltC.mxd

Price Creek Timber Treatment Units - Alternative C Conventional


New Crossing
Existing Road
New Temporary Road
Approximate Unit Boundaries
Burn
Harvest
Harvest/Burn
5
6
7
8
9
12
Price
Price Creek
Creek
Price-Pete Divide
CENTENNIAL
MOUNTAINS
7400
7200
7600
7700
7800
8000
8100
8245
8382
8400
7640
7625
7586
R 36 E
R 37 E
17
18
N
0
0.25
0.5
0.75
1
Miles

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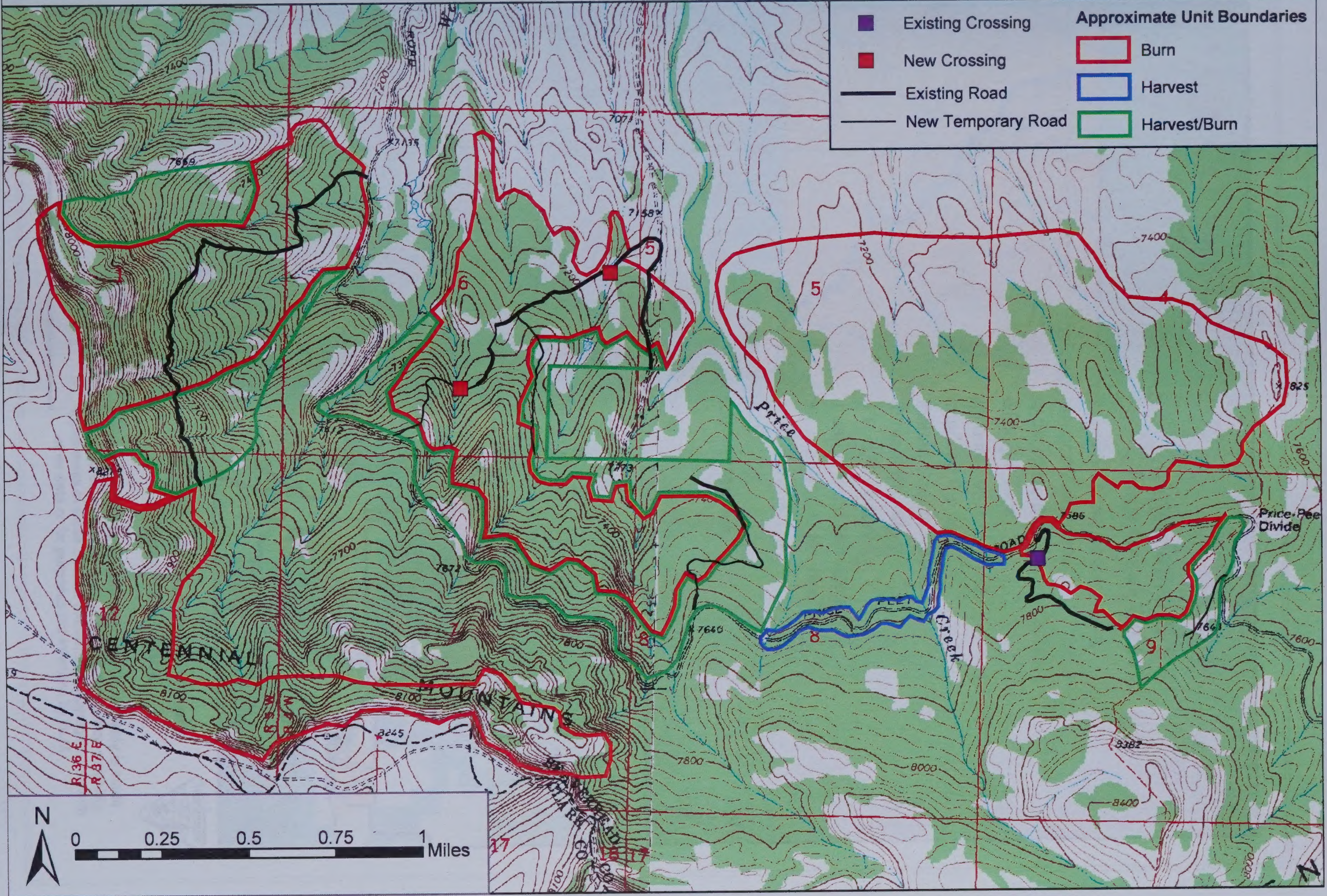
Price Creek Timber Treatment Units - Alternative C Helicopter



Existing Crossing
New Crossing
Existing Road
New Temporary Road
Approximate Unit Boundaries
Burn
Harvest
Harvest/Burn
N
0
0.25
0.5
0.75
1
Miles
5
6
7
8
9
12
Price Creek
Price-Pee Divide
CENTENNIAL MOUNTAINS
7400
7600
7800
8000
8100
8400

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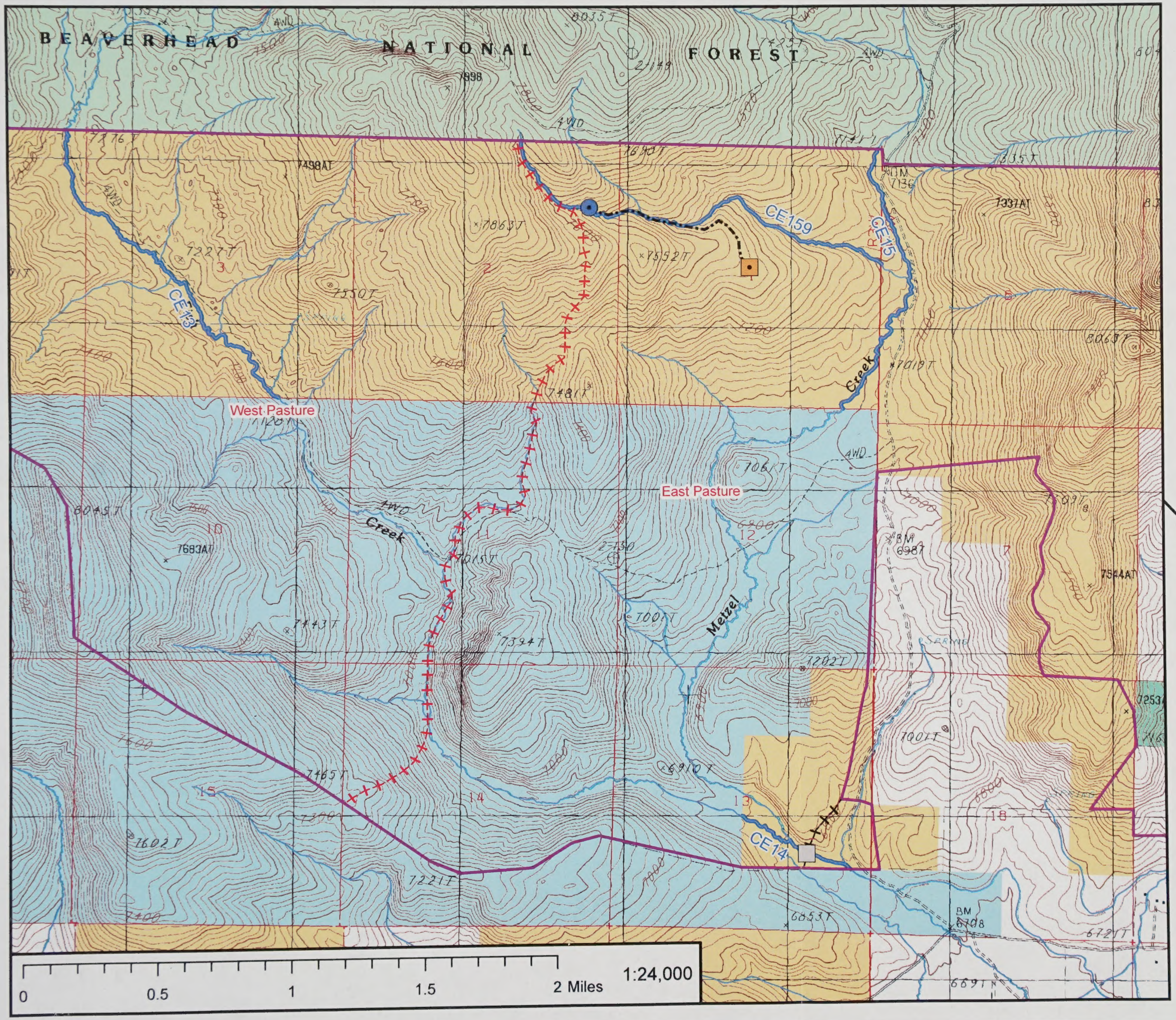
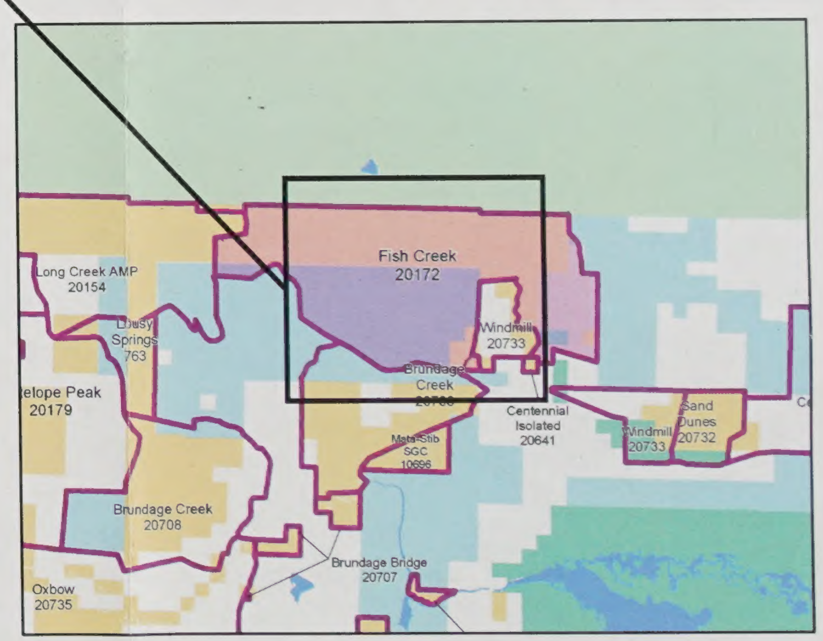

BEAVERHEAD NATIONAL FOREST
West Pasture
East Pasture
CE159
CE175
CE13
CE14
Creek
Fish Creek
Metzel
4WD
7898
7498AT
7863T
7552T
7550T
7227T
7481T
7337AT
8063T
7018T
7061T
8045T
7683AT
7015T
7443T
7394T
7007T
7202T
7001T
6910T
7465T
7602T
7221T
6853T
BM 6708
6721T
6691T
BM 6987
7544AT
7097
BM 7136
2
3
6
7
10
11
12
13
14
15
18
0
0.5
1
1.5
2 Miles
1:24,000

Alternative B & C
Fish Creek (20172)

● Proposed Spring Development
▣ Proposed Water Trough
☐ Proposed Harden Stream Crossing
++ Existing Fence
++ Optional Fence in Alt. B / Proposed Fence in Alt. C
-·- Proposed Pipeline
— Riparian Stream Reach
▭ Allotment Boundary
▭ Pasture Boundary
🟨 Bureau of Land Management
🟩 Fish and Wildlife Service
🟩 Forest Service
☐ Private
🟦 State of Montana

N


Fish Creek
20172
Long Creek AMP
20154
Lousy Springs
763
elope Peak
20179
Windmill
20733
Brundage Creek
Centennial Isolated
20641
Sand Dunes
20732
Windmill
20733
Brundage Creek
20708
Brundage Bridge
20707
Oxbow
20735

Bureau of Land Management
Dillon Field Office

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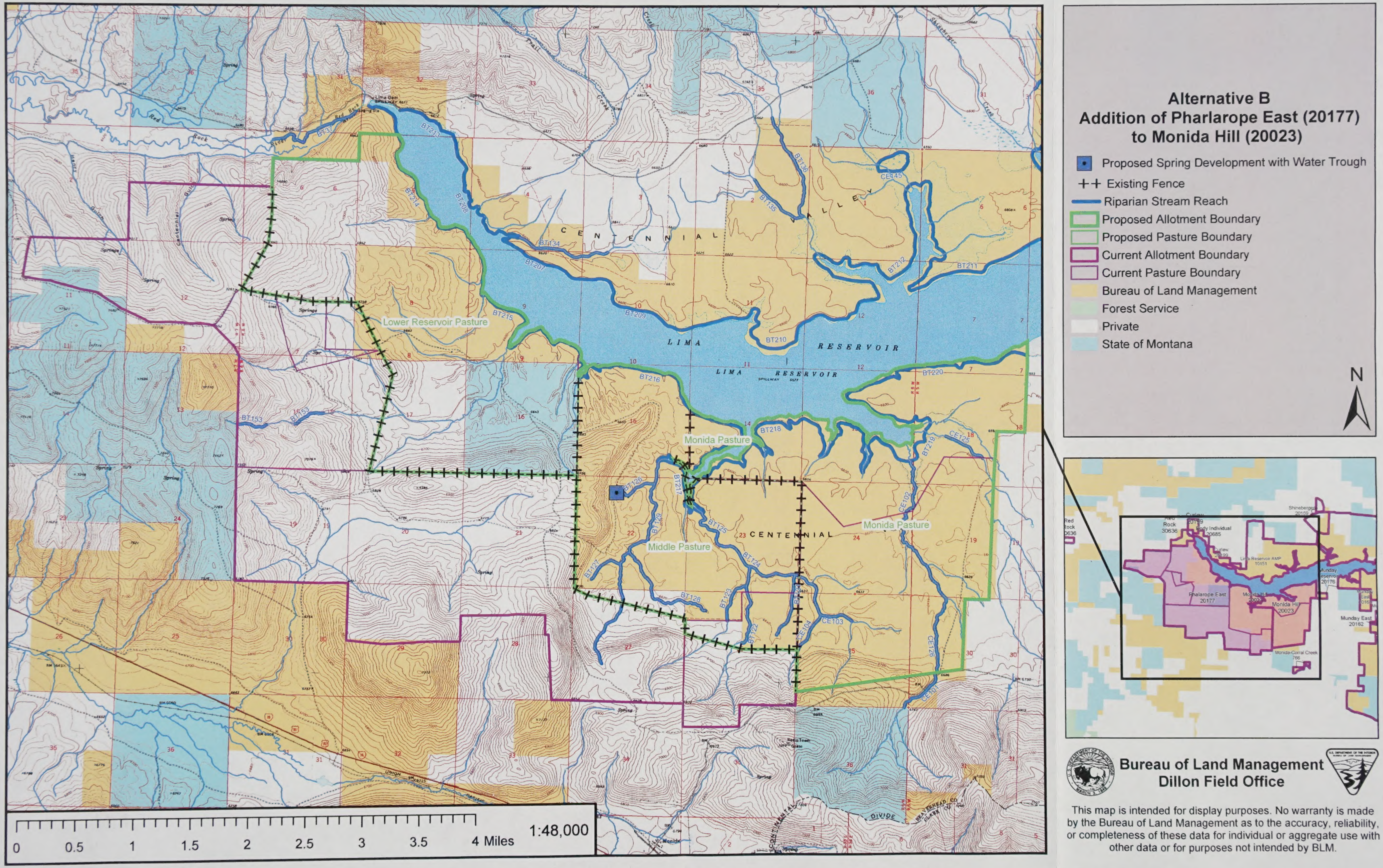
Lima Reservoir
Centennial Valley
Centennial
Lower Reservoir Pasture
Monida Pasture
Middle Pasture
Red Rock River
Lima Dam
Spillway
Continental Divide
Beaverhead Co.
Clark Co.
BT214
BT213
BT208
BT207
BT134
BT209
BT215
BT216
BT210
BT212
BT211
BT220
BT218
BT219
BT217
BT126
BT125
BT124
BT123
BT122
BT127
BT128
BT129
BT153
BT135
BT136
CE145
CE125
CE102
CE103
CE104
CE126
CE101
N
0
0.5
1
1.5
2
2.5
3
3.5
4 Miles
1:48,000
Red Rock 30636
Curlew 20159
Cody Individual 20685
Lima Reservoir AMP 10151
Phalarope East 20177
Monida Hill 20023
Monida Hill 20023
Munday East 20162
Munday Reservoir 20176
Monida-Corral Creek 766
Shineberger 20160

Alternative B
Addition of Pharlarope East (20177) to Monida Hill (20023)

- ▣ Proposed Spring Development with Water Trough
- ++ Existing Fence
- ━ Riparian Stream Reach
- 🟩 Proposed Allotment Boundary
- ▢ Proposed Pasture Boundary
- 🟪 Current Allotment Boundary
- ▢ Current Pasture Boundary
- 🟨 Bureau of Land Management
- ▢ Forest Service
- ⬜ Private
- 🟦 State of Montana

Bureau of Land Management
Dillon Field Office

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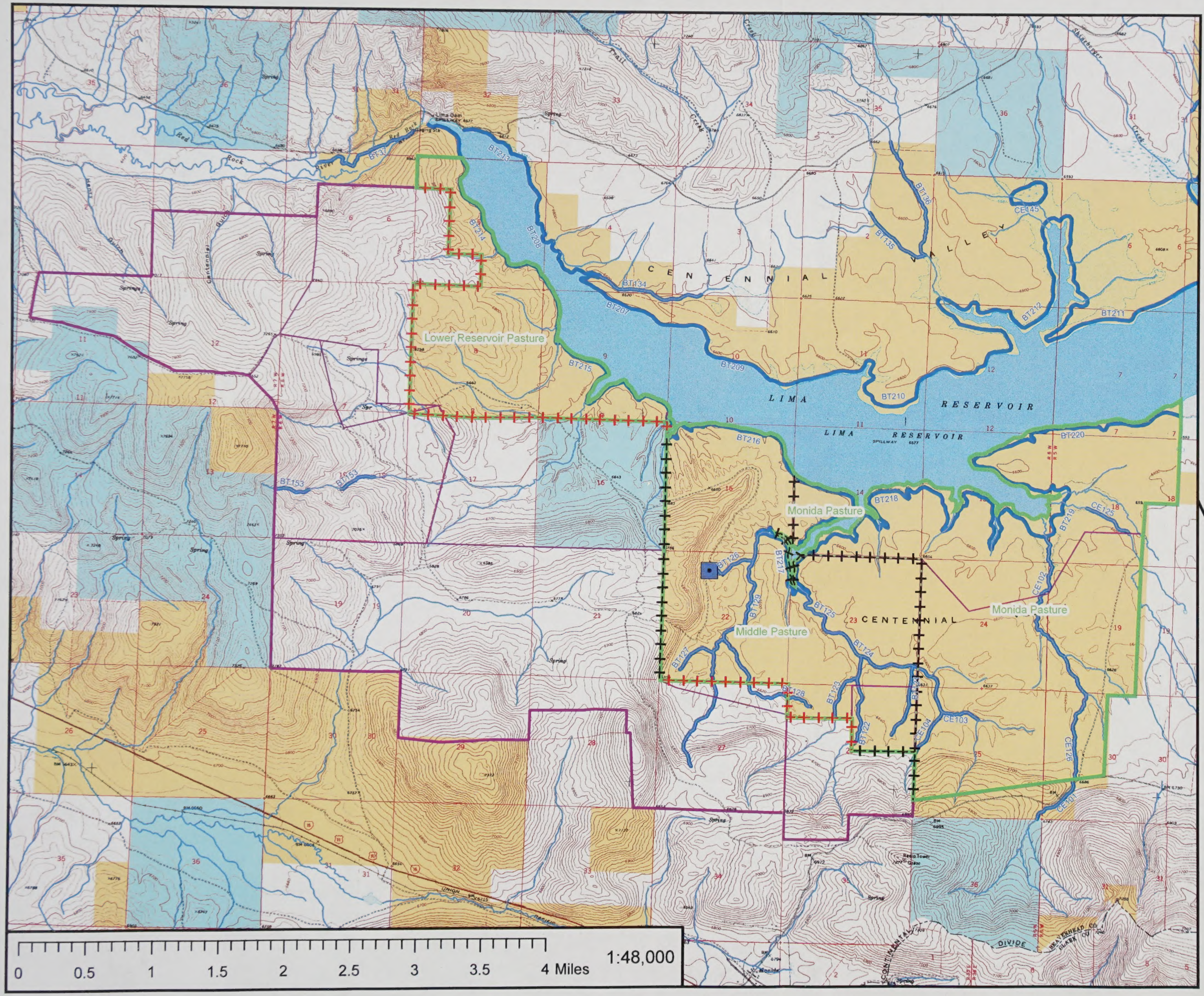
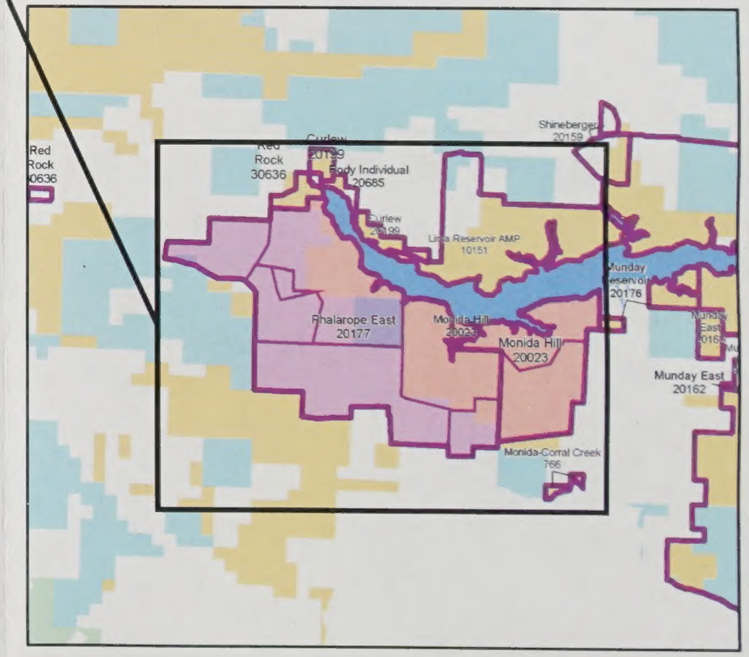

Lower Reservoir Pasture
Monida Pasture
Middle Pasture
Monida Pasture
CENTENNIAL VALLEY
CENTENNIAL
LIMA RESERVOIR
LIMA RESERVOIR
SPILLWAY
Red Rock River
Lima Dam
BT213
BT214
BT208
BT207
BT134
BT215
BT209
BT210
BT216
BT218
BT217
BT126
BT125
BT129
BT127
BT128
BT123
BT122
BT124
BT135
BT136
BT212
BT211
BT220
BT219
BT153
BT163
BT17
CE145
CE125
CE102
CE103
CE104
CE126
CONTINENTAL DIVIDE
BEAVERHEAD CO.
CLARK CO.
Monida
UNION PACIFIC
0
0.5
1
1.5
2
2.5
3
3.5
4 Miles
1:48,000

Alternative C
Addition of Pharlarope East (20177) to Monida Hill (20023)

- ■ Proposed Spring Development with Water Trough
- ++ Existing Fence
- ++ Proposed Fence
- — Riparian Stream Reach
- ▭ Proposed Allotment Boundary
- ▭ Proposed Pasture Boundary
- ▭ Current Allotment Boundary
- ▭ Current Pasture Boundary
- ▨ Bureau of Land Management
- ▨ Forest Service
- ▭ Private
- ▨ State of Montana

N


Red Rock 30636
Red Rock 30636
Curlew 20199
Rody Individual 20685
Curlew 20199
Lima Reservoir AMP 10151
Shineberger 20159
Munday Reservoir 20176
Munday East 20164
Munday East 20162
Phalarope East 20177
Monida Hill 20023
Monida Hill 20023
Monida-Corral Creek 766

Bureau of Land Management
Dillon Field Office

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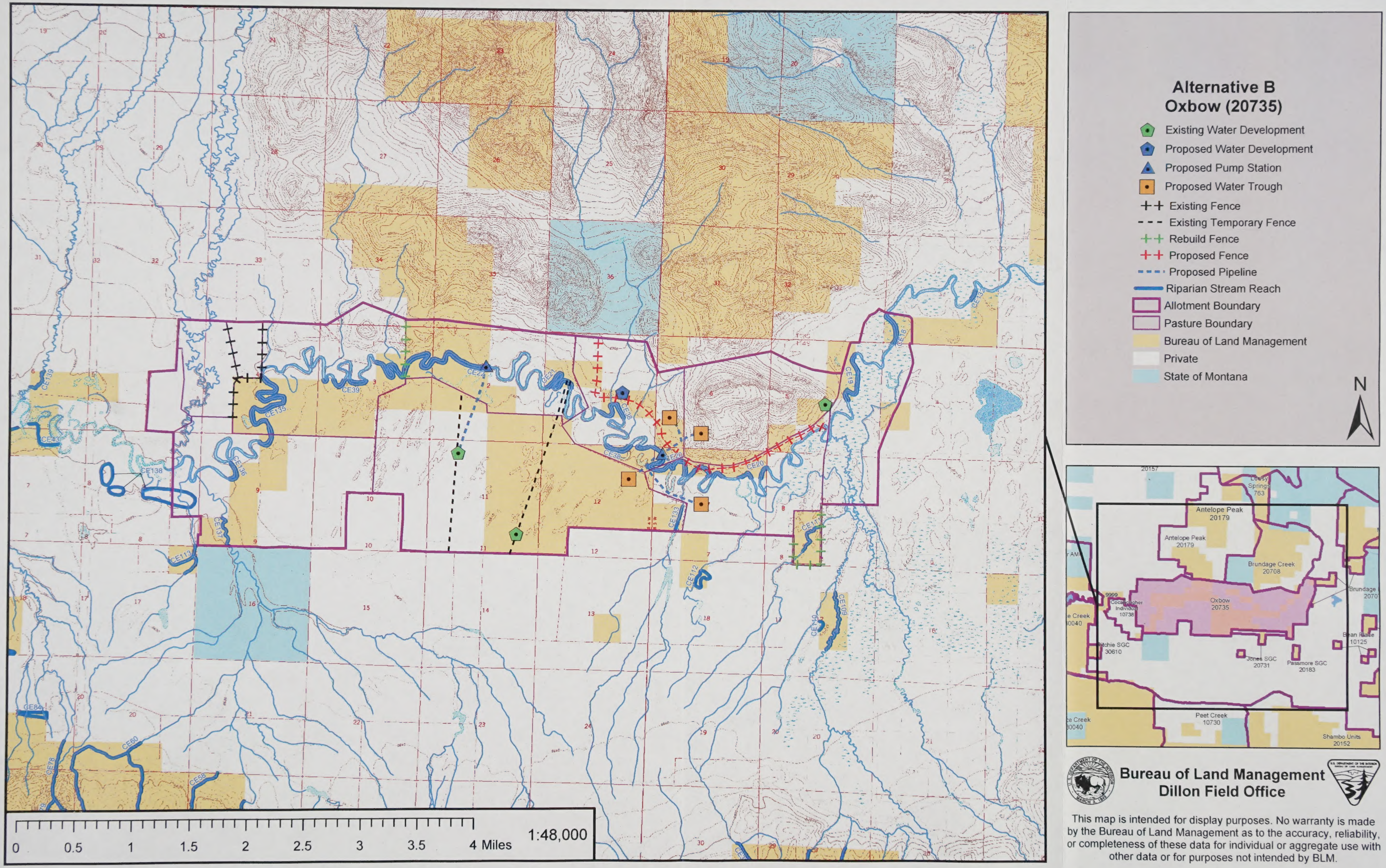
Alternative B
Oxbow (20735)



Existing Water Development
Proposed Water Development
Proposed Pump Station
Proposed Water Trough
Existing Fence
Existing Temporary Fence
Rebuild Fence
Proposed Fence
Proposed Pipeline
Riparian Stream Reach
Allotment Boundary
Pasture Boundary
Bureau of Land Management
Private
State of Montana
N
0
0.5
1
1.5
2
2.5
3
3.5
4 Miles
1:48,000
Antelope Peak 20179
Brundage Creek 20708
Oxbow 20735
Jones SGC 20731
Passmore SGC 20183
Peet Creek 10730
Shambo Units 20152
Lousy Springs 763

Bureau of Land Management
Dillon Field Office

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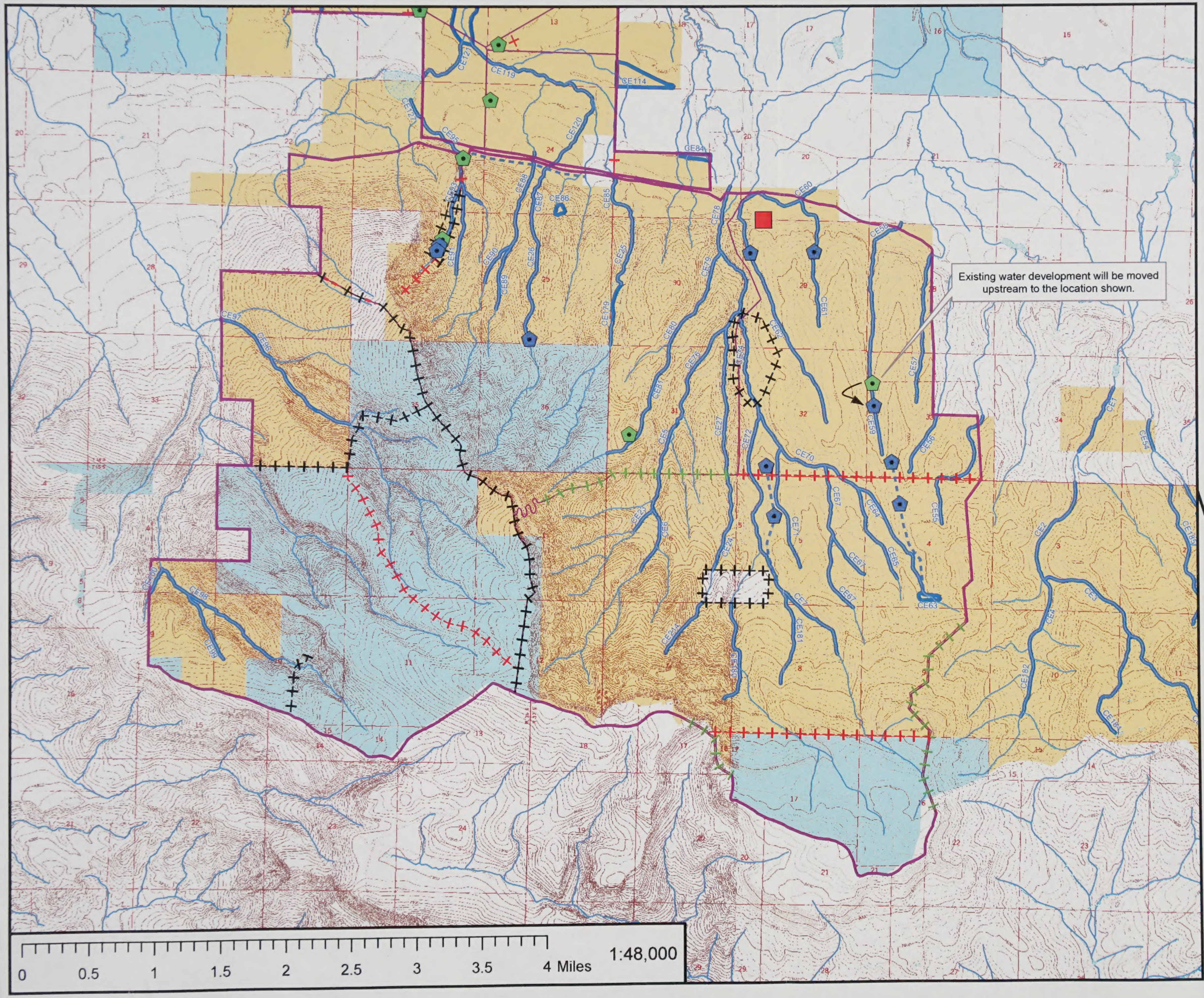
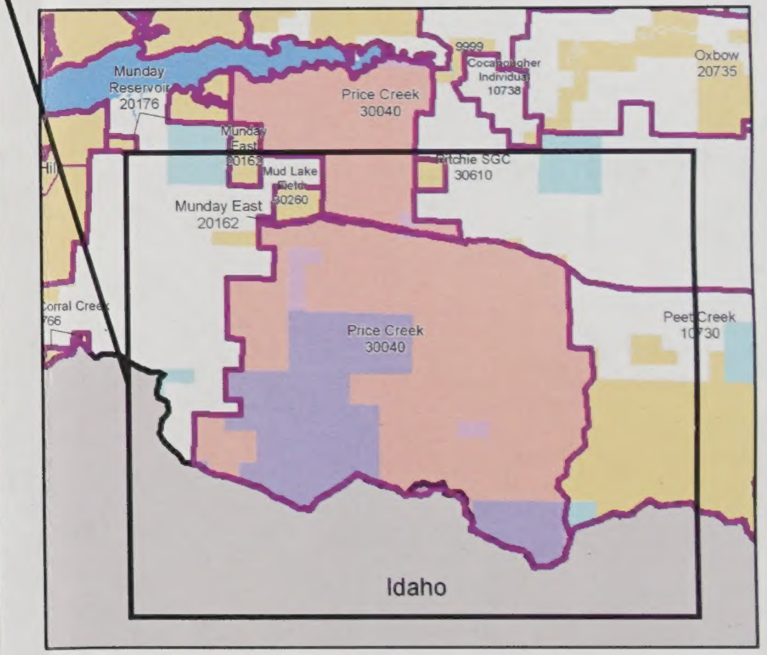

CE121
CE119
CE114
CE122
CE95
CE120
CE84
CE88
CE86
CE87
CE85
CE83
CE90
CE89
CE92
CE179
CE25
CE78
CE60
CE58
CE61
CE97
CE98
CE79
CE80
CE76
CE81
CE27
CE72
CE59
CE57
CE56
CE70
CE23
CE66
CE67
CE64
CE69
CE65
CE71
CE24
CE68
CE63
CE181
CE182
CE2
CE3
CE4
CE184
CE1
CE54
CE185
CE99
CE100
1:48,000
0
0.5
1
1.5
2
2.5
3
3.5
4 Miles

Existing water development will be moved upstream to the location shown.

Alternative B
Price Creek (30040) - Southern Half

- ⬟ Existing Water Development
- ⬟ Proposed Water Development
- 🟥 Proposed Spring Exclosure
- ++ Existing Fence
- ++ Rebuild Fence
- ++ Proposed Fence
- --- Proposed Let Down Fence
- --- Proposed Pipeline
- ━ Riparian Stream Reach
- ▭ Allotment Boundary
- ▭ Pasture Boundary
- 🟨 Bureau of Land Management
- ⬜ Private
- 🟦 State of Montana

N


Munday Reservoir 20176
Price Creek 30040
9999
Cocahougher Individual 10738
Oxbow 20735
Munday East 20162
Mud Lake Field 30260
Ritchie SGC 30610
Munday East 20162
Corral Creek 766
Price Creek 30040
Peet Creek 10730
Idaho

Bureau of Land Management
Dillon Field Office

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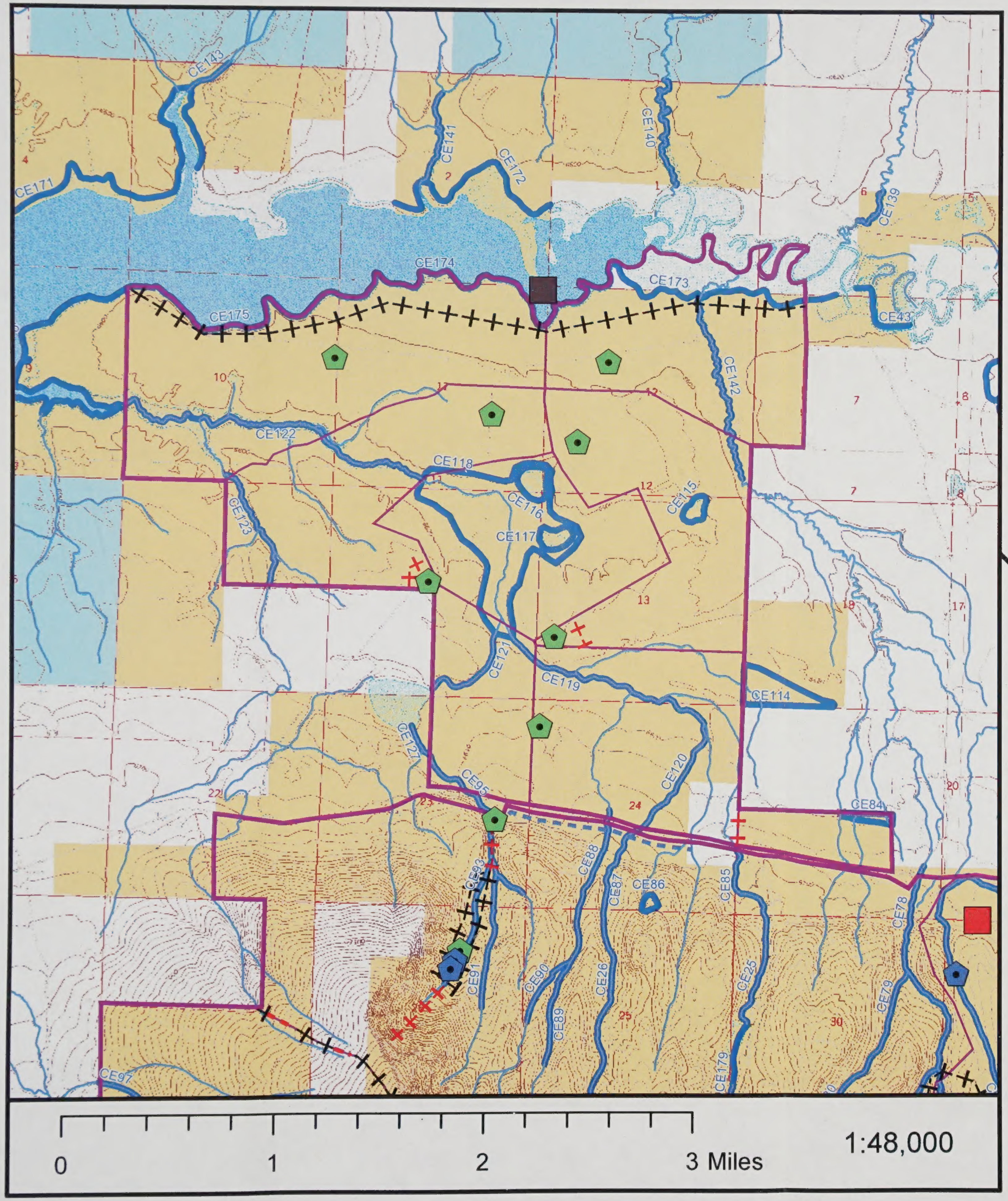
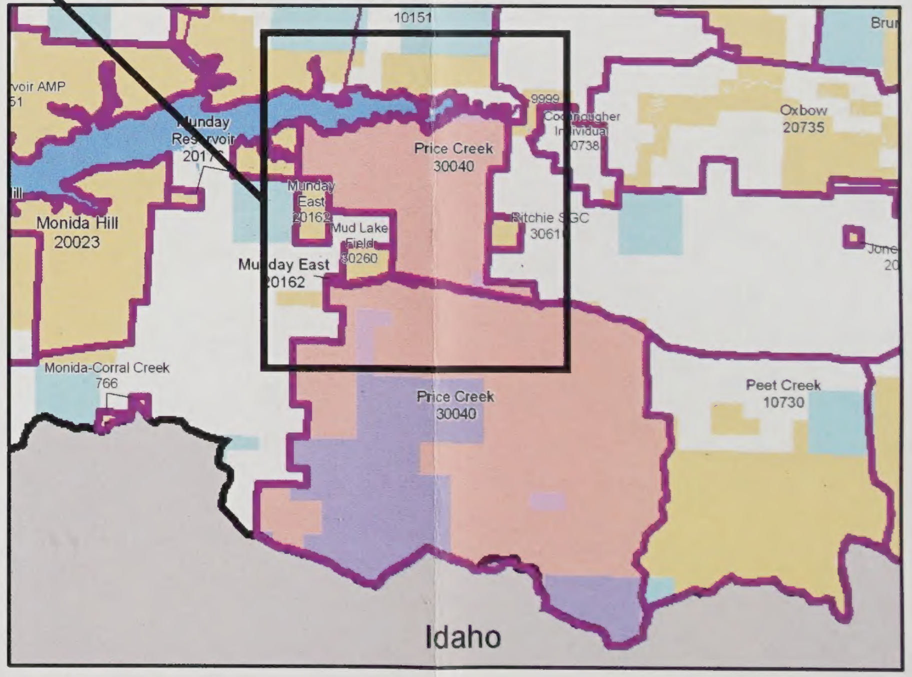
Alternative B
Price Creek (30040) - Northern Half

- ● Existing Water Development
- ● Proposed Water Development
- 🟥 Proposed Spring Exclosure
- ■ Proposed Harden Water Gap
- ++ Existing Fence
- ++ Rebuild Fence
- ++- Proposed Fence
- --- Proposed Let Down Fence
- --- Proposed Pipeline
- — Riparian Stream Reach
- ☐ Allotment Boundary
- ☐ Pasture Boundary
- 🟨 Bureau of Land Management
- ☐ Private
- 🟦 State of Montana



CE143
CE171
CE141
CE172
CE140
CE139
CE174
CE173
CE175
CE43
CE142
CE122
CE118
CE116
CE117
CE115
CE123
CE121
CE119
CE114
CE127
CE95
CE120
CE84
CE93
CE88
CE87
CE86
CE85
CE78
CE91
CE90
CE26
CE25
CE79
CE89
CE179
CE97
0
1
2
3 Miles
1:48,000
N



10151
Bru
voir AMP
Munday Reservoir 2017
Price Creek 30040
Coughagher Individual 10738
Oxbow 20735
Munday East 20162
Mud Lake Split 20260
Ritchie SGC 30610
Monida Hill 20023
Munday East 20162
Jones
Monida-Corral Creek 766
Price Creek 30040
Peet Creek 10730
Idaho

Bureau of Land Management
Dillon Field Office

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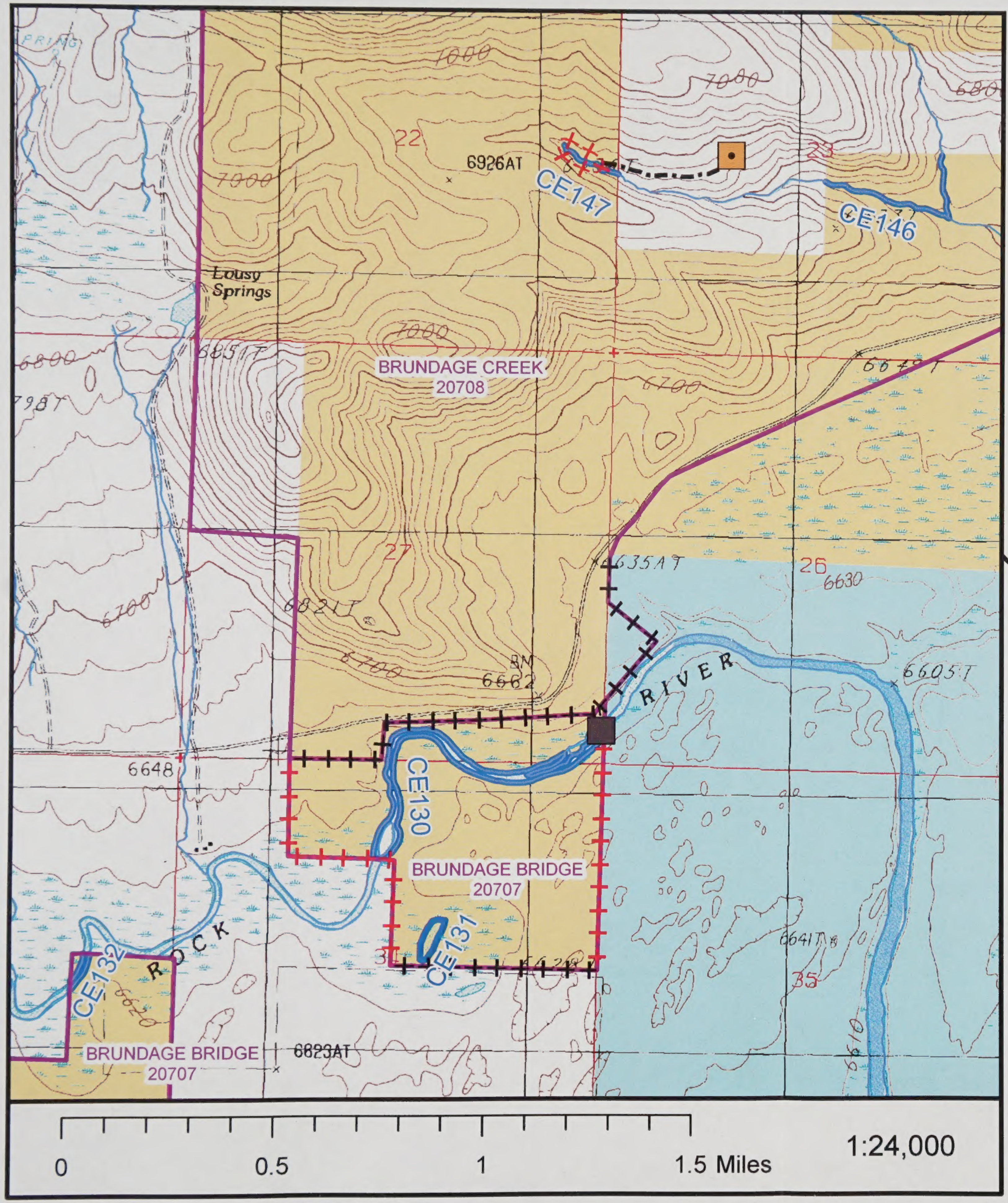
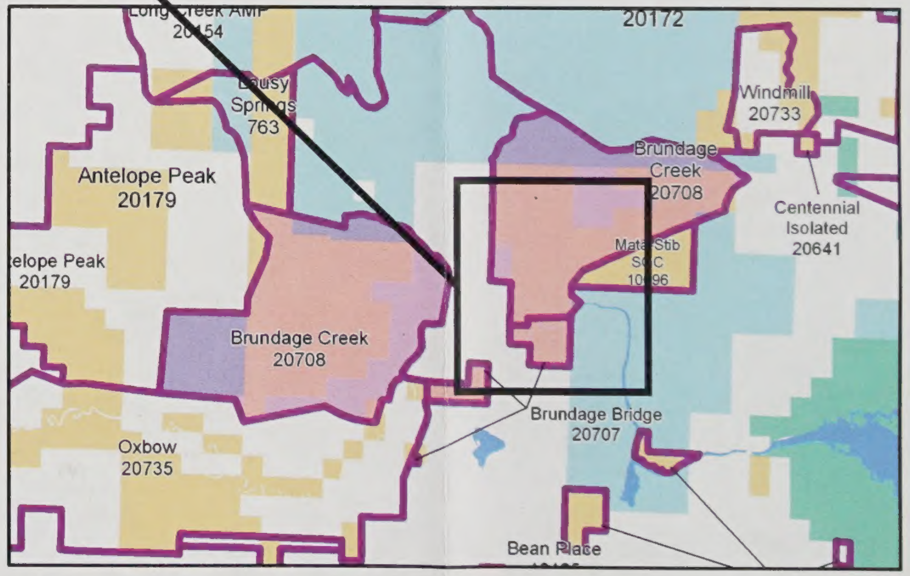

Lousy Springs
BRUNDAGE CREEK
20708
6926AT
CE147
CE146
22
23
27
26
35
RIVER
CE130
CE131
CE132
ROCK
BRUNDAGE BRIDGE
20707
BRUNDAGE BRIDGE
20707
6648
6823AT
6635AT
6630
6605T
6641T
BM 6662
0
0.5
1
1.5 Miles
1:24,000

Alternative B
Brundage Bridge (20707) and Brundage Creek (20708)

- 🟧 Proposed Water Trough*
- ■ Proposed Harden Water Gap
- ++ Existing Fence
- ++ Proposed Fence
- -·-· Proposed Pipeline
- ━ Riparian Stream Reach
- ▭ Allotment Boundary
- ▭ Pasture Boundary
- 🟨 Bureau of Land Management
- 🟩 Fish and Wildlife Service
- ⬜ Private
- 🟦 State of Montana

* Locations of proposed water troughs on state and private lands are approximate.

N


Long Creek AMP
20454
20172
Lousy Springs
763
Windmill
20733
Antelope Peak
20179
Antelope Peak
20179
Brundage Creek
20708
Centennial Isolated
20641
Mate Stib SOC
10096
Brundage Creek
20708
Brundage Bridge
20707
Oxbow
20735
Bean Place

Bureau of Land Management
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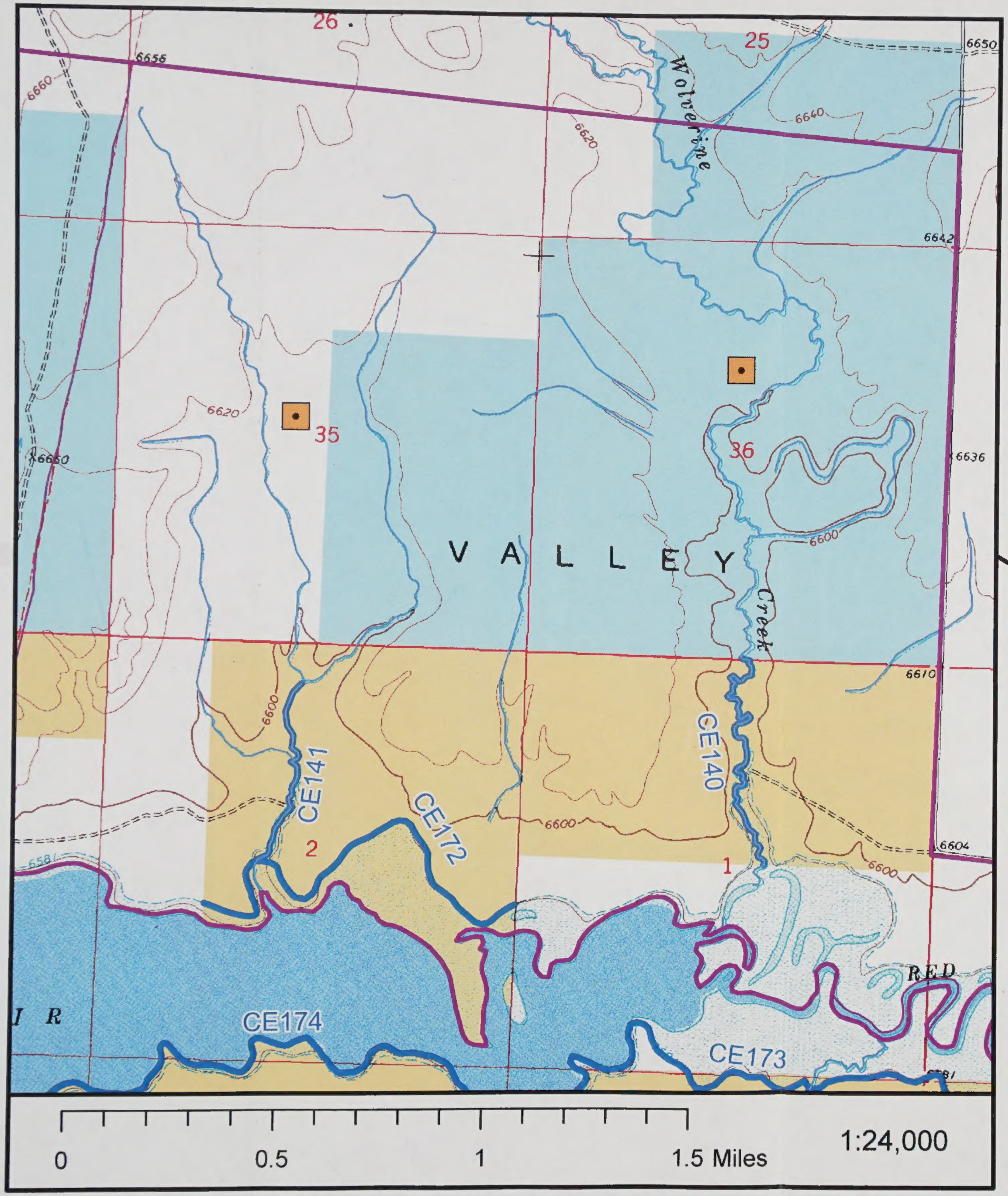
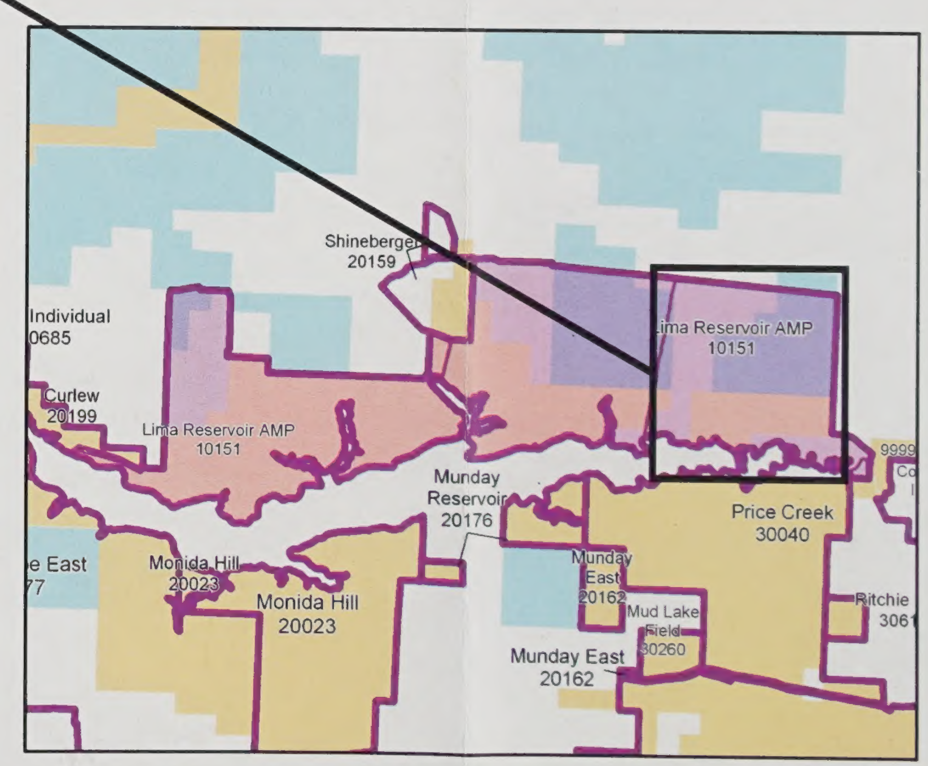

26
25
6650
6656
6660
6620
6640
Wolverine
6642
35
36
6636
6650
V A L L E Y
6600
Creek
6610
CE141
CE140
CE172
6600
2
1
6604
6600
RED
I R
CE174
CE173
0
0.5
1
1.5 Miles
1:24,000

Alternative B
Lima Reservoir AMP (10151)

- 🟧 Proposed Water Trough
- ▬ Riparian Stream Reach
- ▭ Allotment Boundary
- ▭ Pasture Boundary
- 🟨 Bureau of Land Management
- ⬜ Private
- 🟦 State of Montana

* Locations of proposed water troughs on state and private lands are approximate.

N


Shineberger
20159
Individual
0685
Curlew
20199
Lima Reservoir AMP
10151
Lima Reservoir AMP
10151
Munday
Reservoir
20176
Price Creek
30040
e East
77
Monida Hill
20023
Monida Hill
20023
Munday
East
20162
Mud Lake
Field
30260
Ritchie
3061
Munday East
20162

Bureau of Land Management
Dillon Field Office

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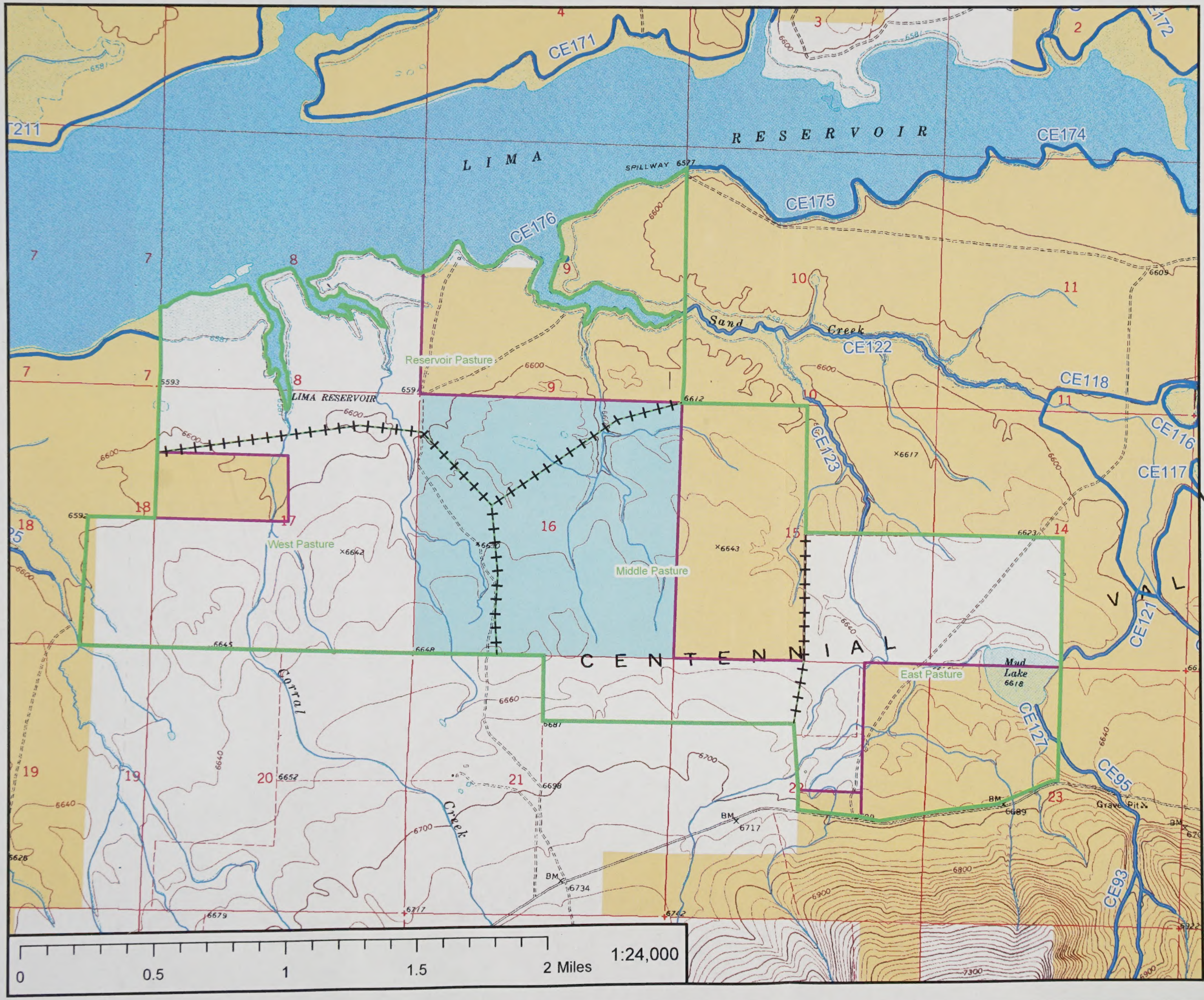
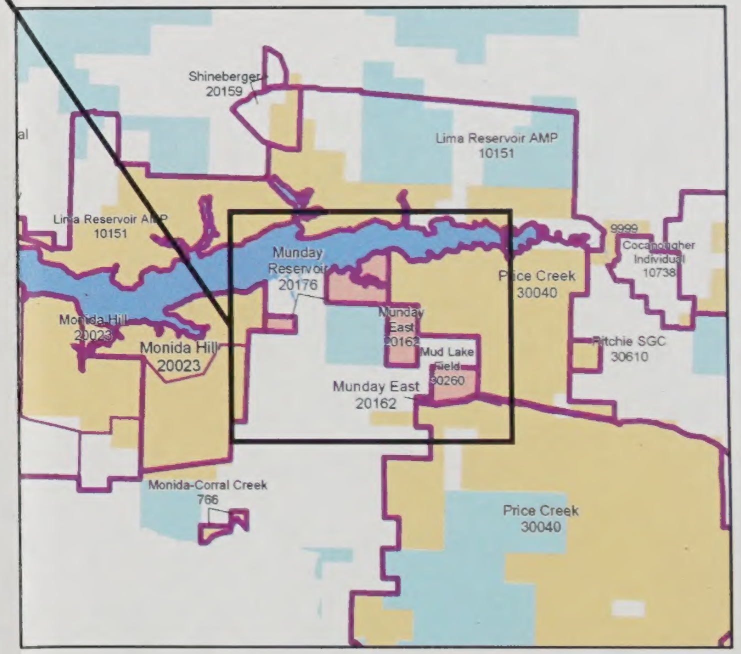

LIMA RESERVOIR
SPILLWAY 6571
CE171
CE172
CE174
CE175
CE176
CE211
CE122
CE118
CE116
CE117
CE123
CE121
CE127
CE95
CE93
Sand Creek
Corral Creek
Reservoir Pasture
West Pasture
Middle Pasture
East Pasture
Mud Lake 6618
CENTENNIAL VALL
Gravel Pit
N
0
0.5
1
1.5
2 Miles
1:24,000

Alternative B
Addition of Munday East (20162) and Munday Reservoir (20176) to Mud Lake Field (30260)

++ Existing Fence
━ Riparian Stream Reach
🟩 Proposed Allotment Boundary
🟩 Proposed Pasture Boundary
🟪 Current Allotment Boundary
🟪 Current Pasture Boundary
🟨 Bureau of Land Management
⬜ Private
🟦 State of Montana


Shineberger 20159
Lima Reservoir AMP 10151
Lima Reservoir AMP 10151
Munday Reservoir 20176
Monida Hill 20023
Monida Hill 20023
Munday East 20162
Mud Lake Field 30260
Munday East 20162
Price Creek 30040
Cocanougher Individual 10738
Ritchie SGC 30610
Monida-Corral Creek 766
Price Creek 30040

Bureau of Land Management
Dillon Field Office

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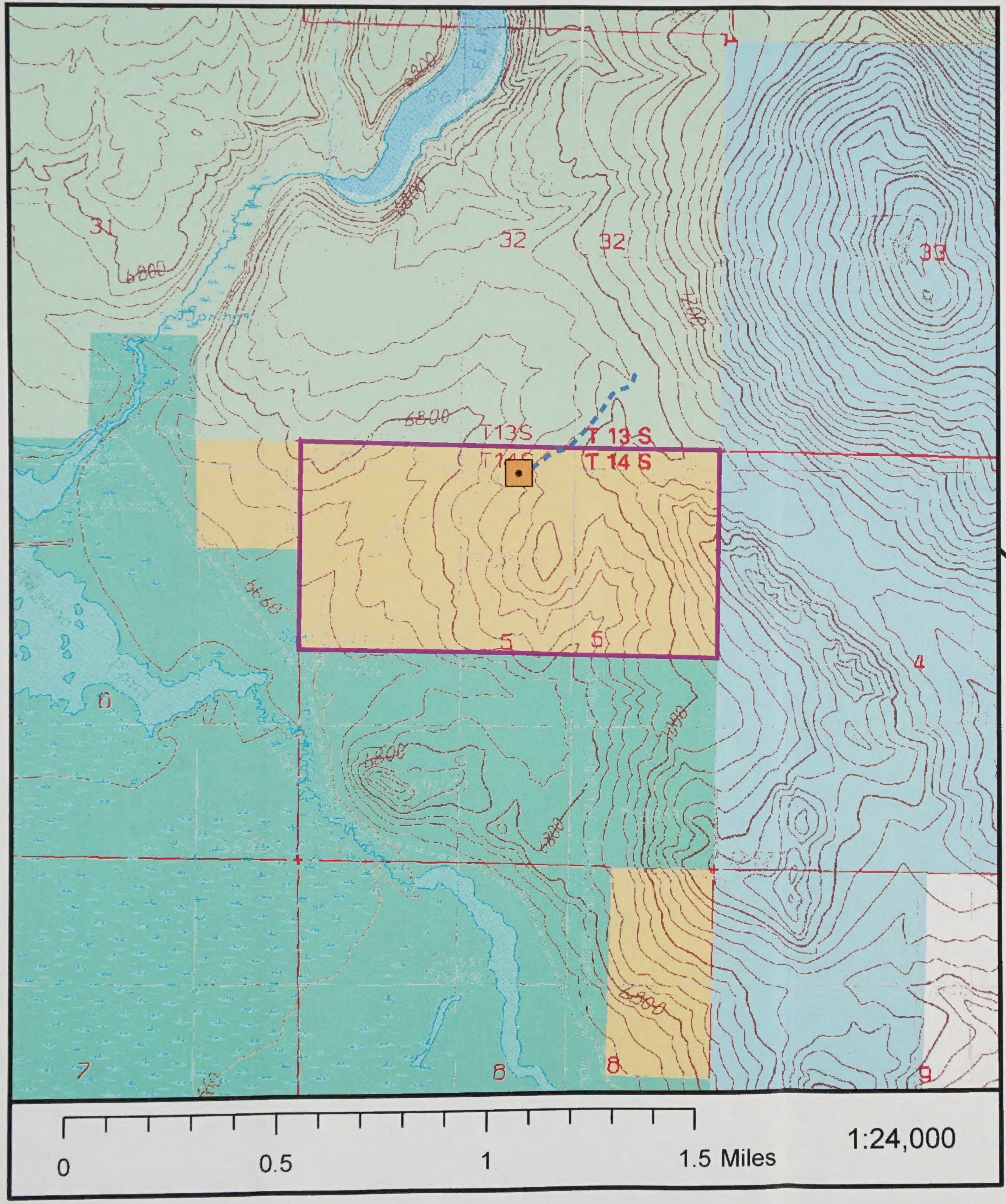
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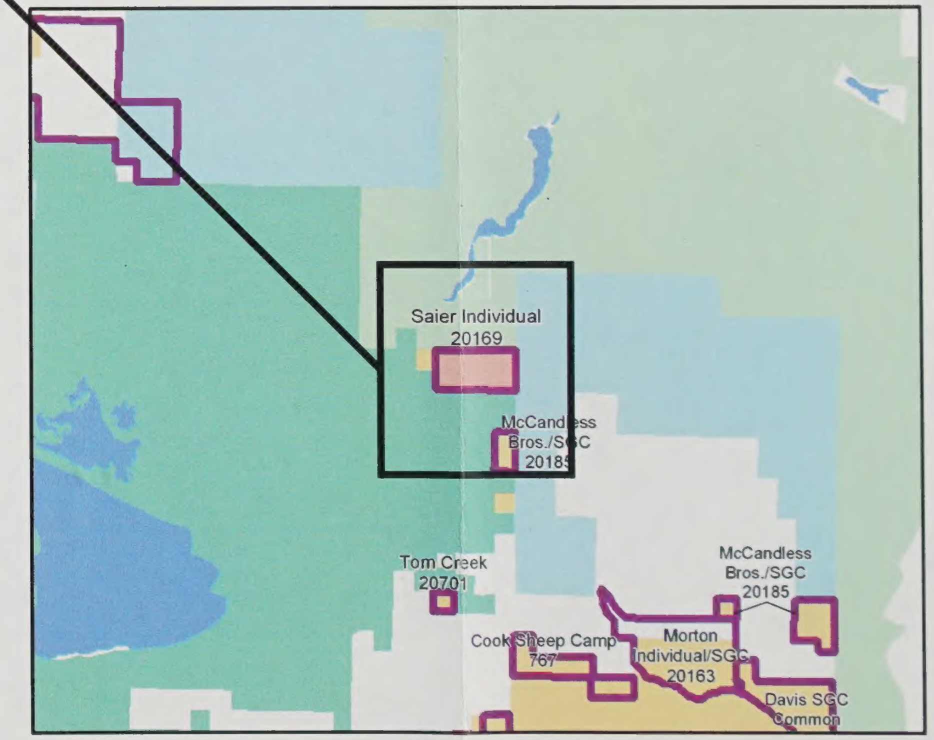
32
32
33
6800
7200
T13S
T 13 S
T14S
T 14 S
5
5
4
6
6600
7200
6800
7
8
8
9
0
0.5
1
1.5 Miles
1:24,000

Alternative B
Saier Individual (20169)

- ● Proposed Water Trough
- - - - Proposed Pipeline
- ☐ Allotment Boundary
- 🟨 Bureau of Land Management
- 🟩 Fish and Wildlife Service
- ▨ Forest Service
- ☐ Private
- 🟦 State of Montana

N


Saier Individual
20169
McCandless
Bros./SGC
2018
Tom Creek
20701
Cook Sheep Camp
767
Morton
Individual/SGC
20163
McCandless
Bros./SGC
20185
Davis SGC
Common

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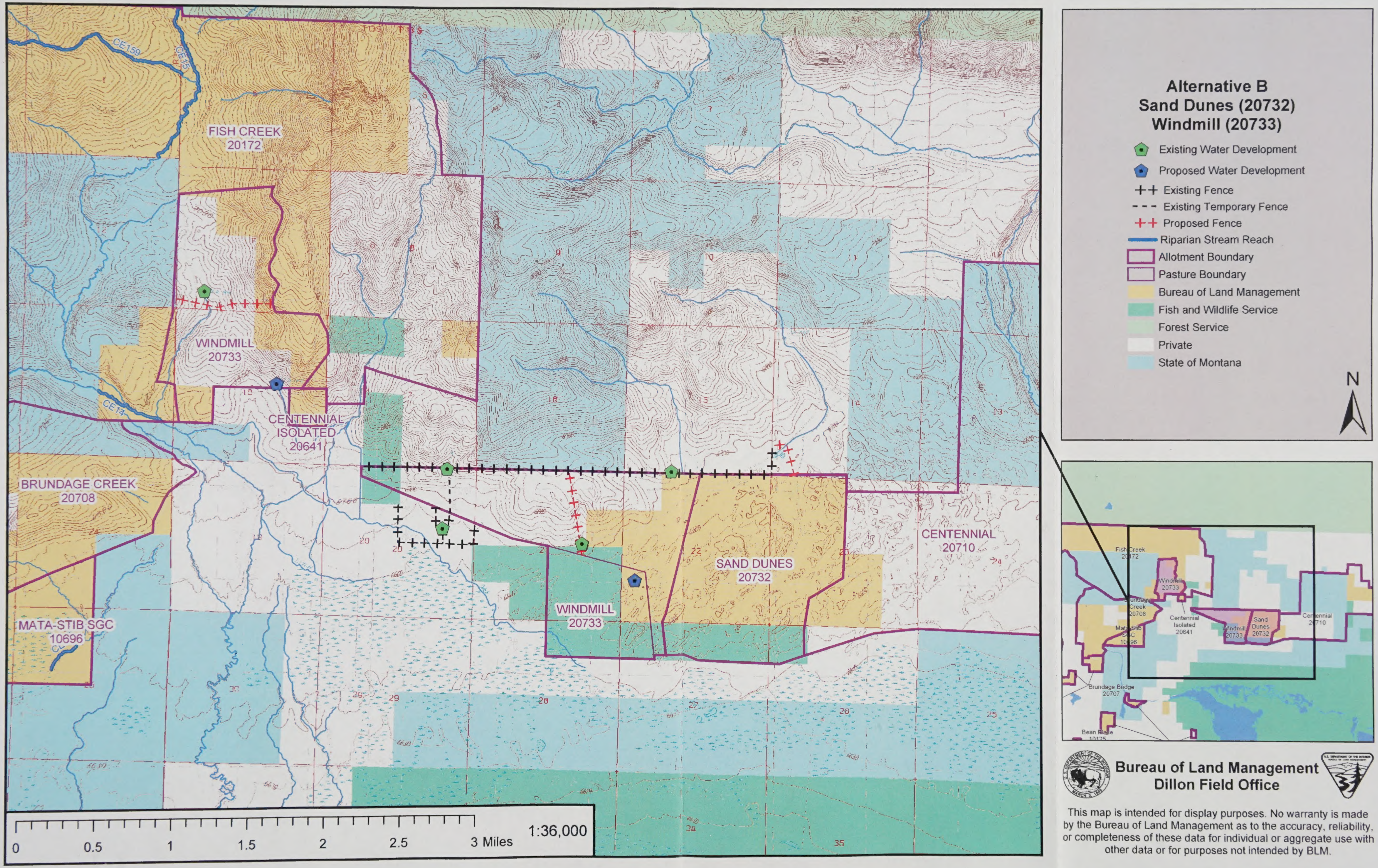

Alternative B
Sand Dunes (20732)
Windmill (20733)

● Existing Water Development
● Proposed Water Development
++ Existing Fence
--- Existing Temporary Fence
++ Proposed Fence
Riparian Stream Reach
Allotment Boundary
Pasture Boundary
Bureau of Land Management
Fish and Wildlife Service
Forest Service
Private
State of Montana
N
FISH CREEK 20172
WINDMILL 20733
CENTENNIAL ISOLATED 20641
BRUNDAGE CREEK 20708
MATA-STIB SGC 10696
WINDMILL 20733
SAND DUNES 20732
CENTENNIAL 20710
CE159
CE14
0
0.5
1
1.5
2
2.5
3 Miles
1:36,000
Fish Creek 20172
Windmill 20733
Brundage Creek 20708
Mata Stib SGC 10696
Centennial Isolated 20641
Windmill 20733
Sand Dunes 20732
Centennial 20710
Brundage Bridge 20707
Bean Ridge 10125

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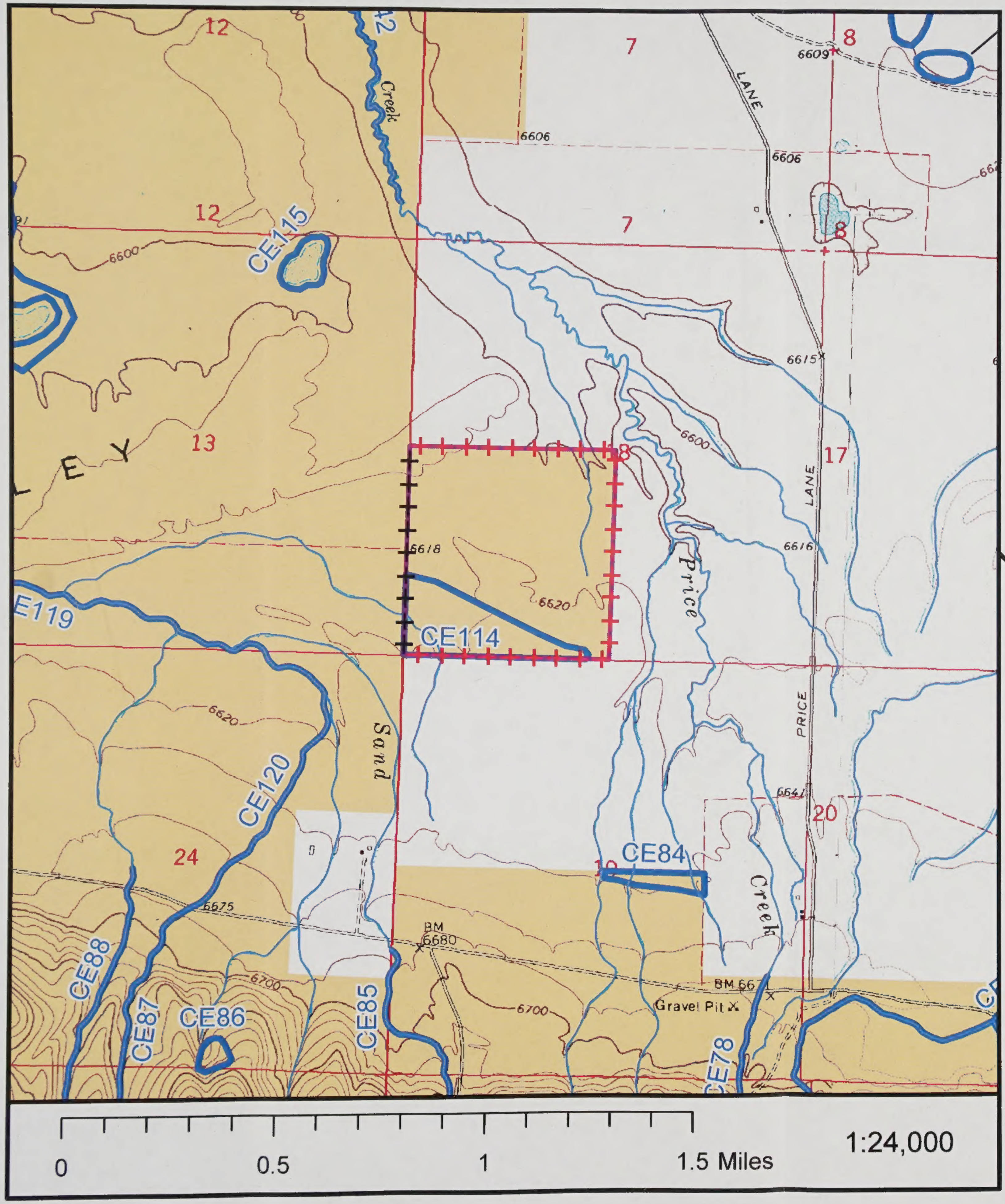
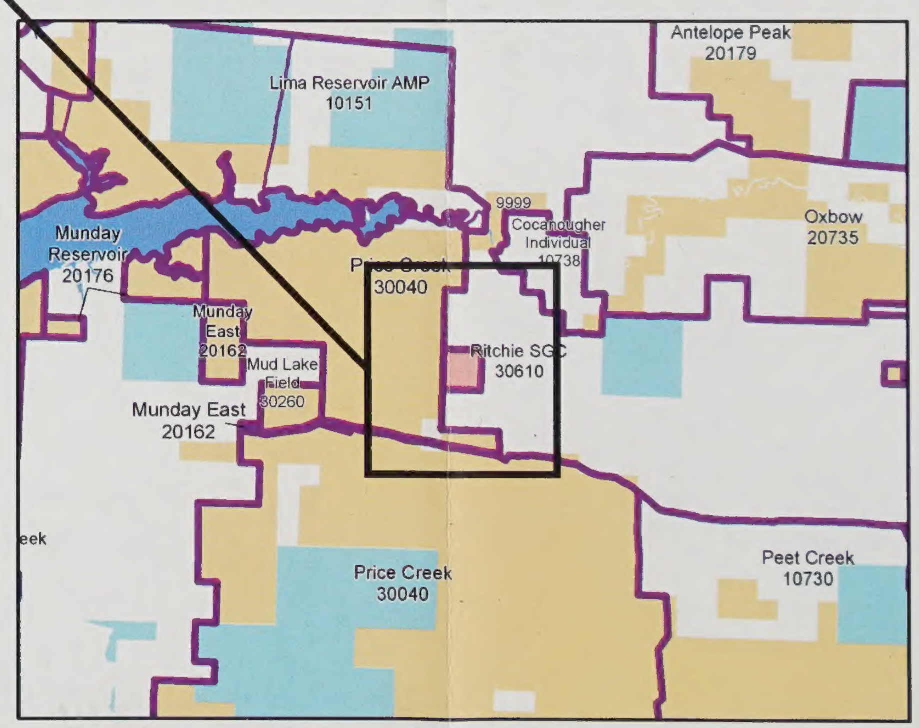

12
7
8
6609
LANE
Creek
6606
6606
12
CE115
6600
7
8
6615
LEY
13
6600
17
LANE
6618
6616
Price
6620
E119
CE114
6620
Sand
CE120
PRICE
6641
20
24
CE84
19
Creek
6575
BM
6680
6700
CE88
CE87
CE86
CE85
6700
BM 667
Gravel Pit
CE78
0
0.5
1
1.5 Miles
1:24,000

Alternative B
Ritchie SGC (30610)

- ++ Existing Fence
- ++ Proposed Fence
- ▬ Riparian Stream Reach
- ▭ Allotment Boundary
- ▭ Pasture Boundary
- 🟨 Bureau of Land Management
- ☐ Private
- 🟦 State of Montana

N


Antelope Peak
20179
Lima Reservoir AMP
10151
Munday
Reservoir
20176
9999
Cocanougher
Individual
10738
Oxbow
20735
Price Creek
30040
Munday
East
20162
Mud Lake
Field
30260
Ritchie SGC
30610
Munday East
20162
eek
Price Creek
30040
Peet Creek
10730

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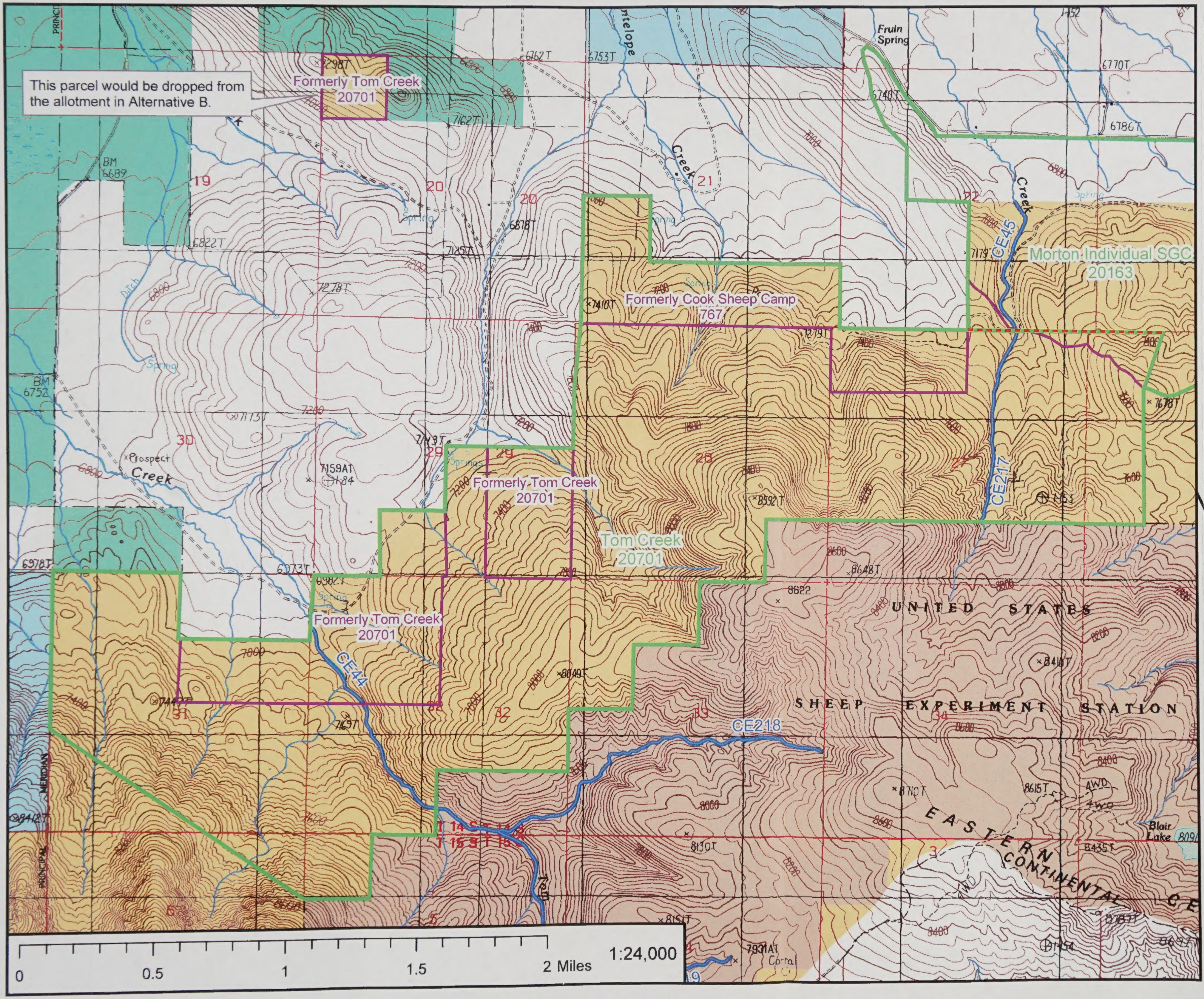
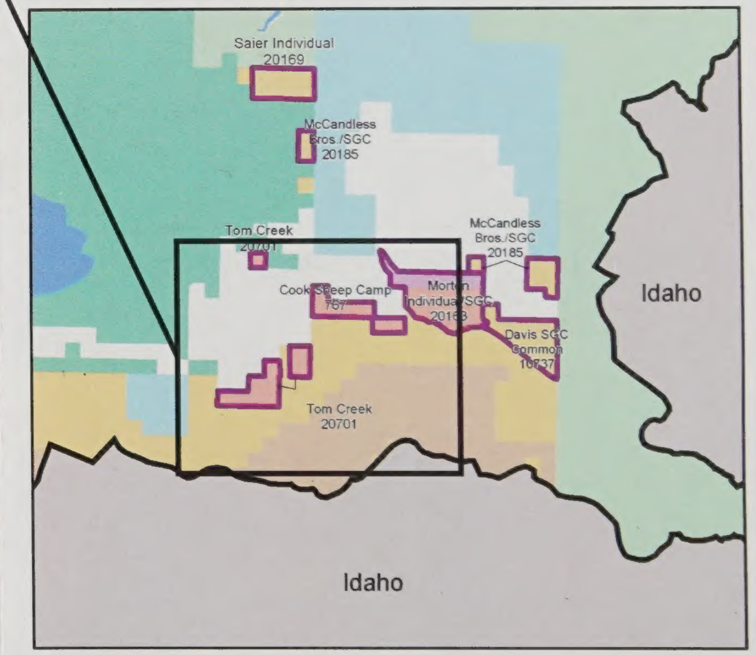
Alternative B
Cook Sheep Camp (767)
Morton Individual SGC (20163)
Tom Creek (20701)

- 🟥 Proposed Let Down Fence
- 🟦 Riparian Stream Reach
- 🟩 Proposed Allotment Boundary
- 🟪 Current Allotment Boundary
- 🟨 Bureau of Land Management
- 🟩 Fish and Wildlife Service
- 🟩 Forest Service
- 🟫 Other Federal
- ⬜ Private
- 🟦 State of Montana


This parcel would be dropped from the allotment in Alternative B.
Formerly Tom Creek 20701
Formerly Cook Sheep Camp 767
Morton Individual SGC 20163
Tom Creek 20701
Formerly Tom Creek 20701
Formerly Tom Creek 20701
CE45
CE217
CE44
CE218
Fruin Spring
Prospect Creek
UNITED STATES SHEEP EXPERIMENT STATION
EASTERN CONTINENTAL
Blair Lake
Corral
T 14 S T 15 S
0
0.5
1
1.5
2 Miles
1:24,000
N


Saier Individual 20169
McCandless Bros./SGC 20185
Tom Creek 20701
McCandless Bros./SGC 20185
Cook Sheep Camp 767
Morton Individual SGC 20163
Davis SGC Common
Tom Creek 20701
Idaho
Idaho

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Appendix B
Monitoring Plan for Centennial Watershed

Introduction

The purpose of this resource monitoring plan is to measure the effectiveness of management changes and vegetative treatments in meeting the goals and objectives developed for the Centennial Watershed. This plan has been designed to measure progress towards the realization of site specific objectives developed through an interdisciplinary approach to mitigate resource (land health) concerns identified during the Centennial Watershed Assessment process.

This plan will identify when, where and how new studies will be conducted, as well as the types of data that will be collected, how the data will be evaluated, and who will participate in the process. All monitoring methodologies are accepted BLM monitoring methodologies and are described in various BLM or Interagency Handbooks. All existing monitoring studies that are needed to measure progress towards goals and objectives will continue to be read on the same time schedule as new studies.

Site Specific Objectives

There were three driving issues and eight additional resource concerns identified during the Centennial Watershed Assessment and through public scoping. Site specific objectives have been developed for each issue and most resource concerns. The amount of change desired for each of the objectives will be determined once additional baseline data is gathered during the 2005 or 2006 field season. For example, one of the riparian objectives for the Brundage Bridge Allotment is to increase the frequency and cover of sedges (*Carex spp.*) along the greenline of the Red Rock River by 2014. Therefore, we need to measure the frequency and cover of sedges along the greenline prior to implementation of new management and then develop a realistic objective based on site potential. The goal is to make measurable progress towards site specific objectives by 2014.

Issue #1 – Forest and Woodland Health

The objectives for forest and woodland health are:

1. Restore/maintain historic density, structure, and species composition of forest and woodland habitats.
2. Improve forest health and increase resiliency to insects, disease, drought and wildland fire.
3. Maintain/enhance existing aspen and whitebark pine stands and promote successful regeneration of aspen and whitebark pine.
4. Allow fires to burn more naturally to maintain/restore forest health and reduce fuel accumulations.

Monitoring Activities to measure progress towards meeting Forest and Woodland Health objectives:

- The BLM will pursue opportunities for cooperative monitoring of aspen with The Nature Conservancy and Montana Natural Heritage Program. Methodology may include belt transects, cover board studies, and/or photo points.

Pre- Implementation:

- Complete Forest Vegetation Information System (FORVIS) walkthrough survey to classify the existing vegetation type within a representative sample of each stand type. Walkthrough survey data includes canopy species composition and density, understory vegetation, fuel loading, and density and size class of snags and down wood.
- Establish GPS photo points within a representative sample of stand types, and document general stand conditions with photos. Documentation will reflect the particular objectives of individual units.
- Establish GPS photo point(s) showing approximate percent cover habitat type plants and any occurrence of insect/disease at the landscape-scale (e.g. viewpoint of Price Creek drainage from Price-Peet Road).
- Prescribed Burn Units: Gather fuels and vegetation transect data on up to five representative sites. Photographic documentation should include taking photos the growing season before and immediately before the treatment from a designated photo point.

During Prescribed Burn Treatments:

- Fire behavior, fire weather, and smoke dispersion will be observed and documented throughout the ignition portion of each burn to make sure that these elements are within the prescription defined in the burn plan.

Post Implementation:

- Within two years after implementation on a given unit, re-visit stand to obtain the same data measurements described above and evaluate if the stand objectives were reached.
- Prescribed Burn Units:
    - Right after treatment: Photo points and measurements along each pre-treatment transect to determine if treatment objectives have been attained. Place range cage on site to measure production and use.
    - One to four years after treatment: Remeasure transects and photo points to show vegetative response to the treatment and progress towards meeting objectives. Changes in use by big game, specifically elk, within the treatment areas will be measured by conducting pellet group transects prior to treatment and then at least annually for up to five years following treatment.

Issues #2 – Riparian, Wetland and Aquatic Habitat and Associated Species

The objectives for riparian, wetland and aquatic habitat and associated species are:

1. Restore deciduous woody habitat types (aspen, willow) in riparian areas that have been invaded by conifer trees.
2. Increase deep rooted riparian vegetation (sedges, willows) where decreased composition was documented.
3. Restore stream dimension, pattern and profile to the natural range of variation where concerns were documented.
4. Reduce sediment loads where uses on public lands are causing increased sediment. (eg. Red Rock River within Brundage Bridge Allotment, Jones Creek within the Passmore SGC Allotment, Road Cut along East Fork of Price Creek)

5. Improve herbaceous vegetation for waterfowl nesting cover along Red Rock River.
6. Maintain or enhance habitat for westslope cutthroat trout in occupied streams within the watershed.

Monitoring Activities to measure progress towards meeting Riparian, Wetland and Aquatic Habitat and Associated Species objectives:

- Monitor trumpeter swan productivity in coordination with Red Rock Lakes National Wildlife Refuge, the Trumpeter Swan Society and other partners to determine nesting success, cygnet survival, and identify successful territories and potential for reintroduction onto unoccupied territories with suitable habitat.
- Continue monitoring westslope cutthroat trout population and distribution in coordination with Montana Fish, Wildlife and Parks (MFWP).
- Continue monitoring existing riparian studies as applicable.

Table 1. Site specific Riparian and Wetland Habitat and Associated Species Monitoring Objectives

Allotment Name and #	Stream and Stream Reach	Objective	Monitoring Methodology
Fish Creek	Fish Creek CE 14	• Increase willow recruitment • Increase sedges along the greenline	• Cover Board and/or Woody Species Regeneration (willow)
	Metzel Creek CE 159	• Reduce sedimentation from bank disturbances	• Greenline (sedges) • Rosgen's OR Photo point(s)
Monida Hill (including Phalarope East)	Red Rock tributaries BT 121-BT 129	• Increase sedges along the greenline	• Greenline
		• Reduce trampling impacts and increase sedges in wetland areas	• Greenline; photo point(s)
		• Reduce areas of concentrated livestock manure along the shore of Lima Reservoir	• Photopoint(s)
Brundage Creek	Red Rock tribs CE 146 CE 147	• Increase sedges along the greenline • Reduce trampling impacts	• Greenline and/or Photopoint(s)
Brundage Bridge	Red Rock river CE 130	• Increase sedges along greenline • Improve streambank stability by reduce trampling impacts	• Greenline • Rosgens and/or Photopoints
	Stibal Pond CE 131	• Increase cover for nesting	• Vegetation cover board photo plots.
Passmore SGC	Jones Creek CE 109	• Increase sedges along greenline • Improve width depth ratio of stream by reducing streambank impacts	• Greenline • Cumulative width/depth and/or photo point
Price Creek	Price Creek CE 26, CE 87-CE 90, CE 119-CE120	• Maintain vegetative community • Increase bank stability	• Greenline • Cumulative width/depth and/or photo point

Issue #3 – Upland Health, Upland Habitat and Associated Species

The objectives for upland health, upland habitat and associated species are:

1. Increase cover and frequency of native perennial cool season herbaceous species where concerns were documented.
2. Restore or maintain grassland and shrubland habitat types that have conifer expansion.
3. Prevent and reduce noxious weed and invasive species infestations.
4. Create early seral conditions within the sand dunes to provide habitat for endemic special status plant species.
5. Maintain residual herbaceous cover for ground nesting birds, specifically sage grouse.
6. Manage sagebrush habitats so that 70% or more of potential big sagebrush communities provide the vegetation composition and structure to sustain sage grouse populations and other sagebrush obligate species such as antelope and pygmy rabbits.
7. Maintain 15-25% sagebrush canopy cover and herbaceous cover conducive to nest and brood rearing success surrounding leks, as applicable within site potential.

Monitoring Activities to measure progress towards meeting Upland Health, Upland Habitat and Associated Species objectives:

- Continue prevention, early detection, treatment and monitoring of noxious weeds in cooperation Beaverhead and Madison counties, The Nature Conservancy, and other partners.
- Coordinate monitoring of special status plants response to sand dunes treatments with Montana Natural Heritage Program.

Table 2. Site Specific Upland Objectives

Allotment Name and #	Objective	Monitoring Methodologies
Monida Hill #20023 Mud Lake #30260 Ritchie SGC #30610	Increase frequency and cover of cool season perennial bunchgrasses to protect soil, allow for more efficient precipitation infiltration, provide cover for sage grouse, waterfowl and other wildlife species and provide forage for wildlife and authorized livestock.	- Daubenmire and/or - Quadrat (nested) Frequency OR - Photo points (C allotments)
Sand Dunes #20732 Oxbow #20735 Centennial #20710	Increase individuals, density and/or cover of endemic sensitive plants species	Macro-plots and/or belt transects along with photo points
Price Creek #30040 Fish Creek #20172	Decrease conifers in sagebrush steppe habitat	Veg. transects and/or photo points

Table 3. Site Specific Objectives for Sagebrush Habitat

Allotment Name and #	Objective	Monitoring Methodologies
Antelope Peak #20179 Brundage Bridge #20707 Brundage Creek #20708 Centennial Isolated #20641 Fish Creek #20172 Lima Reservoir #10151 Long Creek #20154 Long Creek SGC #20157 Lousy Spring #00763 Mata-Stib SGC #10696 Monida Hill #20023 Mud Lake #30260 Munday East # 20162 Munday Reservoir #20176 Oxbow #20735 Price Creek #30040 Ritchie SGC # 30610 Windmill #20733	Delineate seasonal habitats of sage grouse. Maintain nesting canopy cover of 15–25% sagebrush on the majority of the area within two miles of leks. Maintain adequate herbaceous understory on the majority of the area within two miles of leks during nesting /early brood rearing (typically April through mid-June). The herbaceous understory objective is an average of 6 to 7 inches within site potential. Maintain brood rearing canopy cover of 15–25% sagebrush near riparian areas or wet meadows while maintaining available forbs in the wet meadows. Maintain or increase composition of highly nutritious forbs (ie composites and legumes) in nesting/early brood rearing habitat.	Habitat Characterization Monitoring; This methodology may combine telemetry study* (radio collar and tracking of hens to identify nesting and brood-rearing habitats) with Line Intercept and Daubenmire plots to measure canopy cover of sagebrush and herbaceous understory. Herbaceous understory will be measured annually within time constraints of staff.

Threatened & Endangered Species and Migration Corridors

Continue large carnivore study in cooperation with Wildlife Conservation Society to determine occurrences and habitat use of large carnivores in the Centennial Watershed. Continue yearly raptor route surveys and monitoring of peregrine falcon eyries to document reproductive success. Maintain winter use big game utilization studies to continue monitoring the habitat quality and determine if management of these areas is providing the seasonal habitat requirements of existing populations and population objectives of big game.

Cultural Resources

The goals and objectives for cultural resources in the watershed are to maintain the integrity of existing cultural resources; mitigate potential adverse impacts of any proposed range or habitat improvement projects through project redesign or abandonment; and to record the presence and location of any previously unreported cultural resources on public lands.

A review of previously recorded cultural resources has determined that properties in nine allotments have reportedly been, or have potential to be, affected by cattle grazing or trampling. Approximately 20% (n=23) of the 114 previously recorded cultural resources in the study area should be revisited in order to determine if adverse impacts associated with grazing management continue to occur. In addition, certain site types such as vision quest locations retain particular importance to most Native American Groups. For that reason, sites 24BE32, 24BE289, and 24BE434 are expected to hold religious importance to Native Americans and should be afforded special considerations. These sites should be monitored on a regular basis to insure that adverse impacts do not inadvertently occur at these locations.

Air Quality
Existing monitoring will continue.

Socioeconomics
Trends in socioeconomics will not be monitored by the BLM.

Recreational Impacts/Access and Off Road Use
Compliance checks and visitor counts will be conducted and documented by photos where applicable.

Wilderness Characteristics
Compliance checks and continuation of existing monitoring. Wilderness Study Area monitoring forms will be completed, and photographic documentation will be used where applicable.

Visual Resources
Photographic documentation will be completed from key observation points as part of all vegetation treatment projects.

Protection of Private Property from Wildland Fire
Results of prescribed fires in meeting specific objectives will determine the effectiveness of protection of private property. This will be documented in the prescribed fire monitoring.

Types of Data Collected

Most established permanent vegetative and physical trend transects in the Centennial Watershed were read and data was updated during 2004. However, to adequately measure progress towards site specific objectives, additional studies will be established in key areas during 2005. Baseline data will be gathered during the 2005 field season, as necessary to adequately measure progress towards meeting objectives. The baseline data will be considered the starting point from which to measure progress towards meeting objectives or effectiveness of management changes.

Key areas are defined as relatively small areas that reflect or have the capability to reflect the effectiveness of management of the resources of a larger area. Depending on management objectives, a key area may be a representative sample of a large stratum, pasture, allotment, or a particular management area. Key areas or monitoring sites should represent the high variability of riparian, upland and forest habitat types, patterns of use, and conditions of forest, rangeland or riparian health. Over the next several years the following data will be collected (See Table 4).

- Actual livestock and wildlife use. Actual use is the grazing use made on an area by all classes of forage consumers. This information is necessary to provide a correlation between utilization and trend data. Considered alone, actual use data are essentially meaningless. However, when considered in conjunction with climate and utilization data, this data is necessary to interpret trend data accurately.

- Annual compliance, including utilization of upland forage, browse levels on willows and aspen, measurement of sedge stubble heights and measurement of stream bank alteration, where applicable. This monitoring will occur primarily at established key areas, but may occur in other areas as well. In areas where competition for resources may occur between livestock and big game, pre-livestock data may also be collected. This annual data will be used to help accurately interpret trend data.
- Local precipitation and temperature. This data is necessary to interpret trend data accurately.
- Long term trend. Trend data will be used to measure progress towards meeting objectives as described above.

Trend refers to the direction of change and indicates whether the forest, rangeland, riparian area or other resource is being maintained or is moving toward or away from the desired plant community or other specific management objectives. Trend studies are important in the long term for determining the effectiveness of management actions toward meeting management objectives.

Trend data will be collected again in 2014 unless specified otherwise for specific objectives. The Centennial Watershed will be re-assessed or evaluated during the winter of 2015. In this process, all monitoring data will be summarized, analyzed, interpreted, and evaluated to measure progress toward meeting objectives. Trend data gathered in 2014 will be compared to baseline trend data gathered in 2004 and 2005. The measured change in the data will be used to measure progress toward meeting objectives, thereby evaluating management and making informed decisions regarding subsequent management (continuation or change). For example, if monitoring data shows that progress is being made toward established objectives, current management will be continued or modified slightly as warranted or allowed according to the data. However, if data shows a downward trend (change away from objectives) or does not show any progress toward meeting objectives by 2011, and it is determined that current livestock management is a significant factor in precluding progress toward meeting objectives, then management will be adjusted by implementing an alternate system, changing the season of use and/or reducing authorized AUMs. The level of adjustment will be determined by the degree of divergence from the objectives.

Table 4. Planned Resource Monitoring Activities

Type	Method	Responsibility	Frequency
Actual Use	Actual Use Reports submitted by permittees; Wildlife observation forms; Pellet group transects within forest health treatment areas. Wildlife population monitoring in cooperation with the MFWP. Recreation user days	Range, Wildlife and Recreation Staffs	Annually; Pellet group transects will be conducted prior to and for up to 5 years following treatment.
Compliance/ Utilization	Utilization – Grazed/Ungrazed Method	Range, Wildlife or Fisheries	Annually, where applicable
	Stubble height – Stubble Height Method		

Type	Method	Responsibility	Frequency
	Bank alteration – Stream bank Alteration Methodology as defined by Idaho State Office BLM, 2000	Biologists, Hydrologist	
	Browse use – To be determined		
Climate	Precipitation data available from National Oceanic and Atmospheric Administration and other sources	Available from external sources	Annually
Habitat Characterization	Possibly Sage grouse telemetry study. Herbaceous understory measurements along established transect within nesting and early brood-rearing habitat.	Wildlife Staff (if telemetry study is done, it will be in conjunction with MFWP.	Annually, as resources allow. Annually
Trend (also see Table 3)	**Biotic (vegetative)** *Quadrat Frequency* *Daubenmire* *Line Intercept* *Cover Board* *Woody Species Regeneration* *Greenline* *Macroplots/Belt Transects* *Fire Regime Condition Class (FRCC)* *Satellite Imagery (as applicable)*	Range, Wildlife or Fisheries Biologists, Hydrologists, Foresters, Fuels Specialists	2005 where new baseline data is needed. Trend data will be gathered again in **2014**
	Physical *Cross section* *Rosgens*		
Watershed Evaluation	Analysis, Interpretation, Evaluation and Recommendations	ID team	FY2015

Monitoring Methodology descriptions are available at the Dillon Field Office.

Budget Requirements

This monitoring plan was prepared with the assumption that funding will remain at or near existing levels for the foreseeable future. In this light, it is anticipated that the bulk of the monitoring load will have to be borne by the existing range, wildlife, fisheries, forestry, fuels, hydrology, recreation, wilderness and cultural resource specialists along with a minimum of six seasonal employees each field season for the duration of this plan.

Appendix C
Special Status Wildlife Species

Special Status Species that are known or suspected to occur in the Watershed	Current BLM Management Status of the Species	Occurrence within the watershed Resident * (R) Transient (T)	Preferred habitat
Bald Eagle (*Haliaeetus leucocephalus*)	Threatened (MT); up for delisting	R	Riparian/wetland
Canada Lynx (*Lynx canadensis*)	Threatened	T	Forest
Gray Wolf (*Canis lupus*)	Threatened, experimental pop.	R	All
Grizzly Bear (*Ursus arctos horribilus*)	Threatened (MT)	T	Forest
Amphibians			
Boreal/Western toad *(Bufo boreas)*	Sensitive	R	Riparian/wetland/forest
Birds			
Black-backed Woodpecker (*Picoides arcticus*)	Sensitive	R	Forest
Black Tern *(Chlidonias niger)*	Sensitive	R	Wetland
Burrowing Owl (*Athene cunicularia*)	Sensitive	T	Grassland
Common Loon (*Gavia immer*)	Sensitive	T	Wetland
Canvasback duck (*Aythya valisneria*)	Sensitive	R	Wetland
Ferruginous Hawk (*Buteo regalis*)	Sensitive	R	Sagebrush shrubland
Flammulated Owl (*Otus flammeolus*)	Sensitive	R	Forest
Franklin's Gull *(Larus pipixcan)*	Sensitive	R	Riparian/Wetland
Great Gray Owl (*Strix nebulosa*)	Senstive	R	Forest
Hairy woodpecker (*Picoides villosus*)	Sensitive	R	Forest Riparian/wetland
Harlequin Duck (*Histrionicus histrionicus*)	Sensitive	T	Riparian/wetland
Loggerhead Shrike (*Lanius ludovicianus*)	Sensitive	R	Sagebrush shrubland
Long-billed Curlew (*Numenius americanus*)	Sensitive	R	Grassland
Northern Goshawk (*Accipiter gentilis*)	Sensitive	R	Forest
Peregrine Falcon (*Falco peregrinus anatum*)	Sensitive	R	Riparian/wetland
Sage Grouse (*Centrocercus urophasianus*)	Sensitive	R	Sagebrush shrubland
Sage Sparrow (*Amphispiza belli*)	Sensitive	R	Sagebrush shrubland

Special Status Species that are known or suspected to occur in the Watershed	Current BLM Management Status of the Species	Occurrence within the watershed Resident * (R) Transient (T)	Preferred habitat
Swainson's Hawk (*Buteo swainsoni*)	Sensitive	R	Riparian/wetland Sagebrush shrubland
Three-toed Woodpecker (*Picoides tridactylus*)	Sensitive	R	Forest
Trumpeter Swan (*Cygnus buccinator*)	Sensitive	R	Riparian/wetland
White-faced Ibis (*Plegadis chihi*)	Sensitive	R	Wetland
Willet *(Catoptrophorus semipalmatus)*	Sensitive	R	Wetland
Wilson's phalarope *(Phalaropus tricolor)*	Sensitive	R	Wetland
Fish			
Adfluvial arctic grayling (*Thymallus arcticus*)	Sensitive	R**	Riparian/wetland
Westslope cutthroat trout *(Onchorhynchus clarkii lewisi)*	Sensitive	R	Riparian/wetland
Mammals			
Fisher (*Martes pennanti*)	Sensitive	R	Forest
Great Basin pocket mouse *(Perognathus parvus)*	Sensitive	R	Sagebrush shrubland
North American Wolverine (*Gulo gulo luscus*)	Sensitive	R	Forest
Pygmy Rabbit (*Brachylagus idahoensis*)	Sensitive	R	Sagebrush shrubland
Townsend's Big-eared Bat (*Corynorhinus townsendii*)	Sensitive	T	Forest

*Resident includes migratory species that fulfill a portion of their life history here.

** Occurs within the watershed but not known to currently occupy BLM administered streams.

Appendix D
Biological Evaluation Summary for Special Status Plants

None of the plants currently listed as endangered or threatened under the Endangered Species Act are known from BLM lands in the Dillon Field Office. However Ute Ladies' Tresses which is listed as threatened in Montana is known from private and state lands in Beaverhead, Madison, Gallatin, and Jefferson counties. Fifty special status (sensitive or proposed sensitive) plant species inhabit BLM lands administered by the Dillon Field Office. Twenty-nine of those species are known to occur within the greater affected area for which cumulative effects will be considered for the Centennial Watershed Environmental Assessment. Habitat for twenty-five special status plant species occur on BLM lands in the Centennial Valley and Mountains. Twenty-three of those species are currently known from BLM lands within the Centennial, while two species, northwestern thelypody and alkali primrose are known only from historic records. The potential effects that the various alternatives may have on these species are summarized in the following table. A detailed discussion of predicted effects and potential impacts to special status plant species and their habitat is provided in the "Supplemental Information on Special Status Plants on BLM Lands in the Centennial Valley and Mountains Watershed" which is part of the complete biological evaluation and is filed in the Centennial Watershed project file.

Definitions of Abbreviations used in the Table.

NI - No Impact

BI - Beneficial Impact

MIIH - May Impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

* **WIFV** - Will Impact Individuals or habitat with a consequence that the action may contribute to a trend toward federal listing or cause a loss of viability to the population or species.

* Consultation with the U.S. Fish and Wildlife Service will be initiated if an alternative is selected that may contribute to a loss of viability to a population of species reviewed in this evaluation.

Biological Evaluation Summary for Special Status Plants

Project name: _Centennial Watershed E.A_ NEPA Document Number: _MT-050-05-02_

Common Name *Genus species*	**Does the species occur on this portion of the Field Office?**	**Is the species or its habitat found in the greater affected area?**	**Are irreversible or irretrievable resources involved?**	**What effect could this proposal have?**		
				Alt. A	**Alt. B**	**Alt. C**
Ute Ladies' Tresses *Spiranthes dilivialis*	NO	NO	--	--	--	--
Cusick's Horse-mint *Agastache cusickii*	NO	NO	--	--	--	--
Western Boneset *Ageratina occidentalis = Eupatorium occidentale*	NO	NO	--	--	--	--
California Amaranth *Amaranthus californicus*	NO	NO	--	--	--	--
Sitka Columbine *Aquilegia formosa*	YES	YES	NO	NI	NI	NI
Sapphire Rockcress *Arabis fecunda*	NO	NO	--	--	--	--
Painted Milkvetch *Astragalus ceramicus var. apus*	YES	YES	NO	NI	BI	BI
Lesser Rushy Milkvetch *Astragalus convallarius var. convallarius = A. junciformis*	YES	YES	NO	NI	NI	NI
Bitterroot Milkvetch *Astragalus scaphoides*	NO	NO	--	--	--	--
Railhead Milkvetch *Astragalus terminalis*	YES	YES	NO	NI	NI	NI
Large-leafed Balsamroot *Balsamorhiza macrophylla*	YES	YES	NO	NI	NI	NI
Low Northern –Rockcress *Braya humilis*	NO	NO	--	--	--	--
Idaho Sedge *Carex idahoa = C. parryana ssp. idahoa*	YES	YES	NO	MIIH	BI, MIIH	BI, MIIH
Fendler Cat's-eye *Cryptantha fendleri*	YES	YES	NO	NI	BI	BI
Beavertip Draba *Draba globosa = D. apiculata*	YES	YES	NO	NI	NI	NI
Wind River Draba *Draba ventosa*	NO	YES	NO	NI	NI	NI
Idaho Fleabane *Erigeron asperugineus*	YES	YES	NO	NI	NI	NI
Linearleaf Fleabane *Erigeron linearis*	NO	NO	--	--	--	--
Buff Fleabane *Erigeron ochroleucus var. ochroleucus = E. parryi*	NO	NO	--	--	--	--
Mat Buckwheat *Eriogonum caespitosum*	NO	NO	--	--	--	--
Railroad Canyon Wild Buckwheat *Eriogonum soliceps*	NO	NO	--	--	--	--
Showy Goldeneye *Heliomeris multiflora var. multiflora = Viguiera multiflora*	YES	YES	NO	NI	NI	NI
Prostrate Hutchensia *Hutchinsia procumbens*	NO	NO	--	--	--	--

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				Alt. A	**Alt. B**	**Alt. C**
Ballhead Ipomopsis *Ipomopsis congesta ssp. crebrifolia*	YES	YES	NO	NI	NI	NI
Simple Bog Sedge *Kobresia simpliciuscula*	YES	YES	NO	MIIH	MIIH	MIIH
Green Molly *Kochia americana*	NO	NO	--	--	--	--
Beautiful Bladderpod *Lesquerella pulchella*	YES	YES	NO	NI	NI	NI
Sand Wildrye *Leymus flavescens = Elymus flavescens*	YES	YES	NO	MIIH	BI	BI
Taper-tip Desert-parsley *Lomatium attenuatum*	NO	NO	--	--	--	--
Marsh Felwort *Lomatogonium rotatum*	NO	NO	--	--	--	--
Soft Blazingstar *Mentzelia montana*	NO	NO	--	--	--	--
Tapered-root Indian Potato *Orogenia fusiformis*	YES	YES	NO	NI	NI	NI
Meadow Lousewort *Pedicularis crenulata*	NO	NO	--	--	--	--
Lemhi Beardtongue *Penstemon lemhiensis*	NO	NO	--	--	--	--
Whipple's Beardtongue *Penstemon whippleanus*	YES	YES	NO	NI	NI	NI
Hoary Phacelia *Phacelia incana*	NO	NO	--	--	--	--
Slender-branched Popcorn Flower *Plagiobothrys leptocladus*	NO	NO	--	--	--	--
Alkali Primrose *Primula alcalina*	YES	YES	NO	MIIH	MIIH	MIIH
Mealy Primrose *Primula incana*	YES	YES	NO	MIIH	MIIH	MIIH
James Stitchwort *Pseudostellaria jamesiana = Stellaria jamesiana*	YES	YES	NO	NI	NI	NI
Lemmon's Alkaligrass *Puccinellia lemmonii*	YES	YES	NO	MIIH	BI, MIIH	BI, MIIH
White-stemmed Globe-mallow *Sphaeralcea munroana*	YES	YES	NO	NI	NI	NI
Silver Chicken Sage *Sphaeromeria argentea*	YES	YES	NO	NI	NI	NI
Thorn Skeletonweed *Stephanomeria spinosa = Lygodesmia spinosa*	NO	NO	--	--	--	--
Rocky Mountain Dandelion *Taraxacum eriophorum*	NO	NO	--	--	--	--
Alpine Meadowrue *Thalictrum alpinum*	YES	YES	NO	MIIH	MIIH	MIIH
Northwestern Thelypody *Thelypodium paniculatum*	YES	YES	NO	MIIH	MIIH	MIIH
Arrow Thelypody *Thelypodium sagittatum ssp. sagittatum*	YES	YES	NO	MIIH	MIIH	MIIH

Common Name *Genus species*	Does the species occur on this portion of the Field Office?	Is the species or its habitat found in the greater affected area?	Are irreversible or irretrievable resources involved?	What effect could this proposal have?		
				Alt. A	Alt. B	Alt. C
Meadow Pennycress *Thlaspi parviflorum*	NO	YES	NO	NI	NI	NI
Cushion Townsendia *Townsendia condensata*	NO	YES	NO	NI	NI	NI
Showy Townsendia *Townsendia florifera*	NO	YES	NO	NI	NI	NI
Long Sheath Waterweed *Elodea bifoliata = E. longivaginata*	NO	NO	--	--	--	--